

# NTS MCAT Past Paper

**2010 to 2019**

**Composed By:  
Educational Testing Service**

**For Further Details Contact us on  
0333-2686482, 0334-2637936**



# Past Paper 2010

# NATIONAL TESTING SERVICE



## NTS past paper 2010

### ENGLISH

Choose the most similar in meaning to the capitalized one.

**1. DISRUPTION:**

- A. Comfort
- B. Luxury
- C. Trouble
- D. Freedom
- E. Calm

**2. INEVITABLE:**

- A. Doubtful
- B. Deny
- C. Unexpected
- D. Certain
- E. Unusual

Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters.

**3. ERADICATION:**

- A. Suppression
- B. Termination
- C. Control
- D. Establish
- E. Extinction

**4. INTERRUPTION:**

- A. A Break
- B. Continuity
- C. Injury
- D. Difference
- E. Crack



Identify the word or phrase that needs to be changed for the sentence to be correct .

5. The stories that she makes out for her children ought to be

A

B

C

written down and published, No error .

D

E

6. We are expecting to go abroad this summer. No error:

A B C D E

**Read the passage to answer questions 7-8**

It is of course a trifle absurd to speak of Asia as a unity and only opposition to western imperialism has caused people to think in these terms Asia contains half the population of the world and at least three very distinct civilization that of Islam that of India and that of china these differ from each other just as they differ from the civilization of christened and these is not the faintest reason to expert them all to act in unison what is to be hoped is an endeavor after cultural or political unity but a determination to uphold independence at home and to respect it elsewhere and when I speak of independence I am not thinking only of politics but also of culture there is a great danger of too much cultural uniformity No great civilization has ever been cosmopolitan .

7. In the view of author, what is the harm of cultural unlfomrily:

- A. It will not lead to the formation of a great civilization
- B. It will lead to the formation of a great cvlization
- C. It will lead to the formation of rich culture
- D. It will lead to the change of environnont
- E. It will lead to the destruction of values

8. The author Is In favor of:

- A Cultural uniformily
- B. Cosmopolitan
- C. Political and cultural Independance
- D. Unity of Asia
- E. None of the above



**Complete the sentences by choosing the most appropriate word, from the given lettered cholcos (A to E) below each.**

9. Nearly everyone dreams of building \_\_\_\_\_ ideal house.

- A. Its
- B. Their
- C. His
- D. Him
- E. Them

10. Life \_\_\_\_\_ water, light, a moderate terperature and a varlety of chemical elements:

- A. Finds
- B. reveals
- C. designs
- D. calculates
- E. requires

**PHYSICS**

11. A particle moves from position  $r_1 = 3i + 2j - 6k$  to position  $r_2 = 14i + 13j + 9k$  under the action of a :

Force  $F = 8i + 2j + 6k$  Find the work done by the force.

- A. 50 units
- B. 75 units
- C. 125 units
- D. 155 units
- E. 200 units

12. A body starts sliding on a rough horizontal surface with a speed of  $10\text{ m/s}$ . If the coefficient of friction is  $0.2$ , find the distance traveled by the body before coming to rest. ( $g = 10\text{ m/s}^2$ )

- A. 15 m
- B. 25 m
- C. 35 m
- D. 40 m
- E. 55 m



13. A battery whose e.m.f is  $40\text{ V}$  has an internal resistance of  $5\Omega$  if this battery's connected to a  $15\Omega$  a resistor 'R' What will be the voltage drop across R :

- A. 10 V
- B. 30 V
- C. 40 V
- D. 50 V
- E. 70 V

14. A particle of charge  $-0.04\text{ C}$  is projected with speed  $2 \times 10^4\text{ m/s}$  into a uniform magnetic field 'B', of strength  $0.5\text{ T}$ . If the particle's velocity as it enters the field is perpendicular to B What is the magnitude of the magnetic force on this particle:

- A. 4N
- B. 8N
- C. 40 N
- D. 80N
- E. 800 N

15. Due to the magnetic force, a positively Charged particle execute uniform circular motion within a uniform magnetic field 'B'. If the charge is  $q$  and the radius of its path is ' $r$ ', which of the following expressions gives the magnitude of the particle's linear momentum:

- A.  $qBr$
- B.  $qB/r$
- C.  $g/Br$
- D.  $B$

16. A transverse wave on a long horizontal rope with a wavelength of 8 m travels at 2m/s at  $t=0$  a particular point on the rope has a vertical displacement of  $+A$ , where  $A$  is the amplitude of the wave. At what time will be vertical displacement of this same point on the rope be  $-A$ :

- A.  $t = 1/8 \text{ s}$
- B.  $t = 1/4 \text{ s}$
- C.  $t = 1/2 \text{ s}$
- D.  $t = 2 \text{ s}$
- E.  $t = 4 \text{ s}$



17. The dimensions of volume and acceleration (respectively) are:

- A.  $LT^{-1}$
- B.  $LT^{-2}$  and  $LT^{-1}$
- C.  $L^3$  and  $LT^{-2}$
- D.  $L^4 T^1$  and  $LT$
- E.  $LT^3$  and  $T^2$

18. A vector such as the velocity of a body undergoing uniform translational motion can be displaced parallel to itself and applied to any point is known as:

- A. Unit vector
- B. Free vector
- C. Null vector
- D. Position vector
- E. Resultant vector

19. What is the flux density at a point 3 cm from the long straight wire, when there is a current of 25 A in a wire: ( $\mu_0 = 4\pi \times 10^{-7}$ ):

- A.  $0.23 \times 10^{-1} \text{ T}$
- B.  $1.67 \times 10^{-4} \text{ T}$
- C.  $2.99 \times 10^{-6} \text{ T}$
- D.  $3.63 \times 10^{-8} \text{ T}$
- E.  $9.99 \times 10^{-7} \text{ T}$

20. If an object is placed 30 cm from a convex lens whose focal length is 15 cm, the size of the image compared to the size of the object will be approximately :

- A. Twice as large
- B. More than twice as large
- C. 1.5 times as large
- D. Smaller
- E. The same size

21. When a conductor of cross-sectional area  $5 \times 10^{-6} \text{ m}^2$  carries a current of 6 A, the drift velocity of the conduction electrons is  $1.2 \times 10^{-4} \text{ ms}^{-1}$ . What is the number density (number per unit volume) of the conduction electrons :

- A.  $4 \times 10^{-28} \text{ m}^{-3}$
- B.  $1.6 \times 10^{-27} \text{ m}^{-3}$
- C.  $2.5 \times 10^{-27} \text{ m}^{-3}$
- D.  $6.3 \times 10^{-28} \text{ m}^{-3}$
- E.  $1.3 \times 10^{-34} \text{ m}^{-3}$



22. A thermocouple is immersed in water at 373 K and the other in Ice at 273 K. The e.m.f of the thermocouple is 90  $\mu\text{V}$  for each 1 K difference in temperature between junctions, and the thermocouple resistance is  $6\Omega$ . What current will flow in the galvanometer :

- A. 1.8  $\mu\text{A}$
- B. 250  $\mu\text{A}$
- C. 300  $\mu\text{A}$
- D. 1.5 mA
- E. 1.8 mA

23. The first law of thermodynamics may be written as  $\Delta U = Q + W$ , where  $\Delta U$  is the increase in internal energy of the system,  $Q$  is the heat transferred to the system and  $W$  is the external work done on the system. Which of the following is correct for the case of an isothermal expansion of an ideal gas:

- A.  $W > 0$
- B.  $W = 0$
- C.  $\Delta U = 0$
- D.  $\Delta U > 0$
- E.  $Q = 0$

24. A body of mass 5 kg, initially at rest, is moved by a horizontal force of 2N on a smooth horizontal surface. Find the work done by the force in 10 sec:

- A. 40 J
- B. 30 J
- C. 50 J
- D. 20 J
- E. 10 J

25. An object is placed 60 cm in front of a concave spherical mirror whose focal length is 40 cm. Which of the following best describes the image:

	Nature of image	Distance from Mirror
A	Virtual	24cm
B	Real	24cm
C	Virtual	120 cm
D	Real	120cm
E	Real	240 cm

26. An object is placed 60 cm from a spherical convex mirror. If the mirror forms a virtual image of 20 cm from the mirror, what is the magnitude of the mirror's radius of curvature:

- A. 7.5 cm
- B. 15 cm
- C. 30 cm
- D. 60 cm
- E. 120 cm



27. Find the unit vector parallel to the vector:  $B = 6i + 12j - 4k$

- A.  $b = 4/14 i + 12/14 j - 4/14 k$
- B.  $b = 6/14 i + 12/14 j - 4/14 k$
- C.  $b = 6/14 i + 17/14 j - 4/14 k$
- D.  $b = 6/14 i + 17/14 j - 4/14 k$
- E.  $b = 9/14 i + 12/14 j - 1/14 k$

28. Two capacitors  $C_1 = 2 \mu F$  and  $C_2 = 4 \mu F$  are connected in series across a 100 V Supply Find the effective capacitance:

- A.  $1/2 \mu F$
- B.  $3/2 \mu F$
- C.  $5/2 \mu F$
- D.  $4/3 \mu F$



**29. A rescue helicopter drops a package of emergency ration to a standard party on ground. If the helicopter is traveling horizontally at 40 m/s at a height of 100 m above the ground where does the package strike the ground relative to the point at which it was released =  $9.8 \text{ m/s}^2$ ):**

- A. 120 m
- B. 130 m
- C. 140 m
- D. 180.7 m
- E. 200.3 m

**30. The radius of the moon is 27% of the earth's radius and its mass is 1.2% of the earth's mass. Find the acceleration due to gravity on the surface of the moon:**

- A.  $0.431 \text{ m/s}^2$
- B.  $1.615 \text{ m/s}^2$
- C.  $2.431 \text{ m/s}^2$
- D.  $3.615 \text{ m/s}^2$
- E.  $4.431 \text{ m/s}^2$



**Questions 31-32:**

A battery has an e.m.f of **6.0 volts** and an internal resistance of **0.4 ohm**. It is connected to a **2.6 ohm resistor** through a SPST (single pole, single throw) switch)

**31. When the switch is open, the potential difference between the terminal of the battery is, in volts:**

- A. 0
- B. 0.8
- C. 2.6
- D. 5.2
- E. 6.0

**32. When the switch is closed, the potential difference between the terminal is, in volts:**

- A. 0
- B. 0.8
- C. 2.6
- D. 5.2
- E. 6.0

**33. Assume that you have two balls of identical volume, one weighting 2 Newton's and other 10 Newton's. Both are falling freely after being released from the same point simultaneously. Which of the following will then be true:**

- I. The 10-N ball falling freely from rest will be accelerated at a greater rate than the 2N ball
- II. at the end of 4s of free fall the 10N ball will have 5 times the momentum of the 2N ball
- III. At the end of 4s of free fall, the 10 N ball will have the same kinetic energy as the 2 N ball
- IV. The 10 N ball possesses greater inertia than the 2 N ball

- A. I, II and III only
- B. I and III only
- C. II and IV only
- D. IV only
- E. None of these

**34. A car waiting at a traffic signal and when the signal turns green, the car starts ahead with a constant acceleration of  $2 \text{ m/s}^2$ . At the same time a bus traveling with a constant speed of  $10 \text{ m/s}$  overtakes and passes the car. How far beyond its starting point will the car overtake the bus:**

- A. 40 m
- B. 30 m
- C. 90 m
- D. 120 m
- E. 100 m



**35. A sample of an ideal gas occupies a volume 'V' at pressure 'P' and absolute temperature 'T', the mass of each molecule is 'm'.if 'k' is the Boltzmann constant then the density of the gas is:**

- A.  $mkT$
- B.  $P/ KT$
- C.  $P/KTV$
- D.  $Mp/KT$
- E.  $2mPT / K$

**36. A ball moving horizontally with speed 'v' strikes the bob of a simple pondulum at rest The mass of the bob is equal to that of the ball If the collision is elastic the bob will to a height:**

- A.  $V^2/g$
- B.  $V^2/2g$
- C.  $V^2/4g$
- D.  $V^2/8g$
- E.  $V^2/7g$



**37. A point source of light is placed at the principal focus of a concave lens. Which of the following will be true of the refracted light:**

1. It will diverge
  2. It will be parallel to the principal axis
  3. It will seem to come from a point  $1/2$  of the radius of curvature from the lens
  4. It will converge
- A. 1, 2, and 3 only  
B. 1 and 3 only  
C. 2 and 4 only  
D. 4 only  
E. none of the above

**38. The quantity of heat required to raise the temperature of one mole of a substance through 1 K, and its units are  $\text{J-mole}^{-1} \text{K}^{-1}$ , is called:**

- A. Carnot engine  
B. Molar specific heat  
C. Kinetic specific heat  
D. General gas law  
E. Boyle's law

**39. A shot leaves a gun at the rate of 160m/s. Calculate the greatest distance to which it could be projected and the height to which it would rise: ( $g=10\text{m/s}^2$ ): .**

- A. 1560m, 540m  
B. 2560m, 640m  
C. 3560m, 740m  
D. 4560m, 840m  
E. 9595m, 348m



**40. A car covers the first contain distance with a speed  $V_1$ . and the socond half with a speed  $V_2$  . Find tho avorage speed during tho whoho Journey:**

- A.  $V_1 + V_2 / 2(V_1 + V_2)$   
B.  $2V_1 + V_2 / V_1 + V_2$   
C.  $2V_1 3V_2 / V_1 + 5V_2$   
D.  $V_1 + V_2 / 5 V_1 + V_2$   
E.  $V_1 + V_2 / 4V_1 + 9V_2$

**CHEMISTRY**

**41. What is the product of both fermentation reactions and fractional distillation**

- A. an ester
- B. an acid
- C. an alcohol
- D. a soap
- E. a base

**42. During condensation polymerization, two monomers may be joined by the removal of a molecule of:**

- A. carbon dioxide
- B. hydrogen
- C. oxygen.
- D. water
- E. none of the above



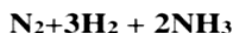
**43. Given the reaction:**



**At STP, how many liters of  $\text{O}_2(\text{g})$  are needed to completely burn 5.0 liters of  $\text{C}_3\text{H}_{10}$  :**

- A. 5
- B. 10
- C. 10.5
- D. 15
- E. 25

**44. For the reaction:**



**The production of  $\text{NH}_3$  will be favored at:**

- A. High pressure and catalyst
- B. Low pressure only
- C. Low pressure and catalyst
- D. High pressure only
- E. Catalyst only

45. The range of pH below \_\_\_\_\_ and above \_\_\_\_\_ of soil represent its sterility “

- A. 5....10
- B. 10....15
- C. 3....10
- D. 10....3
- E. 5....3

46. If NaCl produced in the equation:



Was dissolved in water to make a liter of solution the molarity would be

- A. 0.1M.
- B. 3M
- C. 8 M
- D. 4 M

47. When  $18 \times 10^{-3}$  moles/dm<sup>3</sup> of acetic acid react with  $22 \times 10^{-3}$  of ethyl alcohol to form  $40 \times 10^{-3}$  moles/dm<sup>3</sup> of ethyl acetate and  $40 \times 10^{-3}$  moles/dm<sup>3</sup> Find the value of equilibrium constant of K<sub>c</sub> :

- A. 4.04
- B. 3.14
- C. 3.04
- D. 2.02
- E. 1.04



48. Warmful and undesirable reaction of metal when exposed to atmosphere or any chemical agent is known as:

- A. allotropy
- B. electroplating
- C. collision
- D. cracking
- E. corrosion

49. Catenation is a process in which carbon shows the properties of:

- A. making single bond
- B. hybridization
- C. making long chains or rings of carbon atoms
- D. isomerism
- E. breaking of bonds

**50. Which gas is likely to deviate most from Ideal gas behavior:**

- A. HCl
- B. He
- C. CH<sub>4</sub>
- D. N<sub>2</sub>
- E. O<sub>2</sub>

**51. The maximum number of electrons that an orbital can accommodate is/are:**

- A. 0
- B. 1
- C. 2
- D. 3
- E. 4



**52. Which of the following is not a nucleophile:**

- A. HO
- B. NH<sub>3</sub>
- C. BF<sub>3</sub>
- D. CN
- E. NH<sub>2</sub>

**53. Purification of bauxite whose major Impurity is silica(SiO<sub>2</sub>) is carried out through:**

- A. Baeyer's method
- B. Hall's method
- C. Serpek's method
- D. Contact method
- E. Electrolytic method

**54. Chlorine is manufactured commercially by the electrolysis of aqueous sodium chloride brine  
Which other products are made in this process:**

- A. hydrochloric acid and hydrogen
- B. hydrogen and sodium
- C. hydrogen and sodium hydroxide
- D. sodium and sodium hydroxide
- E. hydrochloric acid and sodium

**55. Sodium reacts with water more vigorously than Lithium because It:**

- A. has higher atomic weight
- B. is more electronegative
- C. Is more electropositive
- D. is a metal
- E. has high melting point

**56. The crystals formed as a result of van der Waals' Interactions are:**

- A. molecular crystals
- B. covalent crystals
- C. metallic crystals
- D. ionic crystals
- E. none of the above



**Educational  
Testing Service**

**57. According to law of mass action, "The rate of chemical reaction is proportional to:**

- A. products
- B. product of molar concentration of reactants
- C. Initial concentration of reactants
- D. catalyst
- E. pressure

**58. The sum of exponents of the molar concentration of the reactants, is equal to:**

- A. molecularity
- B. polarity
- C. activation energy
- D. rate of reaction
- E. order of reaction

**59. Nascent hydrogen used in the formation of methane, is obtained from the reaction of:**

- A.  $\text{NaHCO}_3$  with Zn
- B. HCl with Zn
- C. KOH with Zn
- D.  $\text{H}_2\text{O}$  with Zn
- E.  $\text{CH}_3\text{I}$  with Zn

**60. Zymase a group of 14 enzymes, used in the fermentation of starch, Is present In:**

- A. bacteria
- B. yeast
- C. fungi
- D. algae
- E. virus

**61. The general formula for aldehyde is :**

- A. R-OR
- B. R-COOH
- C. R-CO-R
- D. R-x
- E. R-CHO

**62. When an element exists In more than one crystalline the phenomenon is termed as :**

- A. isomorphism
- B. allotropy
- C. Isomerism
- D. anisotropy
- E. enthalpy

**63. When an element exists in more than one crystalline form, the phenomonon is**

- A.  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$
- B.  $2\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
- C.  $(\text{CaSO}_4) 2 \cdot \text{H}_2\text{O}$
- D.  $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$
- E.  $\text{NaSO}_4 \cdot \text{H}_2\text{O}$

**64. Linear combination of atomic (LCAO) results in the formation of:**

- A. Sigma bond
- B. PI Bond
- C. bonding molecular orbital's only
- D. bonding and antl-bonding molecular orbital's
- E. all of the above

**65. Which of the following statements about  $\text{H}_2\text{S}$  is false :**

- A. It is a covalent compound
- B. It is a gas with bad smell
- C. It is a strong reducing agent than  $\text{H}_2\text{O}$
- D. It's molecule is non-linear
- E. it is a weak base in water



**66. The rain drop acquires spherical shape and Ink spreads over blotting paper due to:**

- A. surface tension
- B. adhesive forces
- C. viscosity
- D. polarity
- E. latent heat of vaporization

**67. 950 torr corresponds to:**

- A. 3.5 atm
- B. 1 atm
- C. 3 atm
- D. 1.25 atm
- E. 2.25 atm



**68. The enthalpy change accompanying the gain of an electron by a neutral gaseous atom is form negative lon is called:**

- A. Ionization potential
- B. electro-negativity
- C. electron affinity
- D. lattice energy
- E. potential energy

**69. Sigma bond is formed by:**

- A. transferring the electrons
- B. head on overlapping of atomic orbitals
- C. mutual but unequal sharing of electrons
- D. parallel overlapping of atomic orbitals
- E. all of the above

**70. The heat of a reaction can be calculated by using:**

- A. Joule's law
- B. Ohm's law
- C. Hess's law
- D. Faraday's law
- E. Boyle's law





**BIOLOGY****QUESTION 71-73**

**Hemophilia is a disorder in which blood fails to clot a male hemophiliac marries Sara is a normal woman and together they have four children two boys Ahmed and Ali and two girls (Alia and Ayesha). None of the children display the symptoms of hemophilia. Ahmed, Ali, Ayesha and Alia all marry normal individuals and have children. None of Ahmed's or Ali's children, male or female, display symptoms of hemophilia, but the sons of Alia and Ayesha display symptoms of hemophilia while the daughters of Alia and Ayesha do not.**

**71. Which of the following best explains the reason that Ahmed, Alia and Ayesha do not display symptoms of hemophilia, even though their father, Saad, is a hemophiliac:**

- A. Hemophilia is an X-linked disorder, and Saad can only pass on his Y chromosome
- B. Hemophilia is an X-linked disorder and even though Alia and Ayesha received from Saad, Sara gave them a normal X chromosome
- C. Hemophilia is a Y-linked disorder, and therefore cannot be displayed in females
- D. Hemophilia is a Y-linked disorder and Ahmed and Ali must have received chromosome from Saad
- E. Hemophilia is an X-linked disorder and even though Ahmed and Ali received a Hemophiliac X-chromosome from Saad Sara gave them a normal X-chromosome

**72. If one of Ali's daughter marries a normal man, what is the probability that one of their children will display symptoms of hemophilia:**

- A. 0%
- B. 25%
- C. 50%
- D. 75%
- E. 100%



**73. Which of the following individuals are heterozygous for hemophilia:**

- A. Saad, Ahmed and Ali
- B. Ahmed, Ali, Alia, and Ayesha
- C. Saad and Sara
- D. Alia and Ayesha
- E. Ahmed and Ali



**74. The propulsive movement of the gastro-intestinal tract (GI tract) is:**

- A. Peristalsis
- B. Epiglottis
- C. antiperistalsis
- D. Anus .
- E. None of the above

**75. The Calvin Cycle consists of \_\_\_\_\_ main roactions:**

- A. 3
- B. 6
- C. 9
- D. 13
- E. 16

**76. Identify the Incorrect statement about the Bathal zone:**

- A. It ranges from surface to depth of about 2000 metres
- B. It consists of pelagic and benthic zones
- C. Is aphetic
- D. It contains producers that prepare food for consumers
- E. None of the above

**77. Deamination in the liver Initially produces:**

- A. Ammonia
- B. Arginine
- C. Ornithine
- D. Urea
- E. Uric acid



**78. The causos of Cyanosis Include:**

- A. Deficiency of vitamin C
- B. Varicella-zoster virus
- C. Degeneration of the cartilage of Joints
- D. Ventricular soptum defect
- E. None of the above

**Educational  
Testing Service**

**79. The prolactin hormone responsible for the activation of mammary glands to start producing milk is a hormone of:**

- A. Pituitary gland
- B. Pancreas
- C. Thyrold gland
- D. Thymus gland
- E. Adrenal gland

**80. Which of the following would be most likely to occur in an ecosystem:**

- A. As the number of prey decreases, the number of predators Increase
- B. As the number of predators Increases, the number of prey Increases
- C. As the number of prey decreases, the number of predators decrease
- D. As the number of prey Increases, the number of predators decreases
- E. As the number of predators decreases, the number of prey decreases

**81. The law of dominance Is Illustrated in the garden pea by:**

- A. Homozygous tall x heterozygous tall
- B. Heterozygous tall x heterozygous tall
- C. Homozygous tall x homozygous tall
- D. Pure short x pure short
- E. Homozygous tall x pure short



**82. Identify the Incorrect statement about Charles Darwin's theory :**

- A. The individual of species have variations among them
- B. There is always a tendency of over reproduction in a species
- C. Vast gradual changes result in the origin of a new species
- D. Favorable varlations survive and unfavorable will be exterminated
- E. Intra specific competition occurs between different species and inter-specific competition occurs among the individuals in a species

**83. identify the Incorrect statement from the following:**

- A. Apical growth Increases the length of stems and roots
- B. Xylem is situated on the outer side of the camblum ring and the phloem on the inner side.
- C. Secondary growth Increases the diameter of stems and roots
- D. The cells in elongation phase don't divide
- E. The cells in formative regions are closely packed together

**84. proteins float in membrane like Ice burg In sea:**

- A. Lock and key model
- B. Induce fit model
- C. Fluid mosaic model
- D. Lokta voltera model
- E. All of the above

**85. In the Hardy-Weinborg principle,  $p^2+2pq+q^2=1$ ,  $q^3$  represents the frequency of the:**

- A. Homozygous dominant
- B. Heterozygous dominant
- C. Heterozygous recessive
- D. Homozygous recessive
- E. Blended genes

**86. Fungi do not contain:**

- A. Cell wall
- B. Hyphae
- C. Chlorophyll
- D. Mycellum
- E. Spores

**87. In a typical nucleotide the nitrogenous base is attached to \_\_\_\_\_ carbon of pentose :**

- A. 6<sup>th</sup>
- B. 5<sup>th</sup>
- C. 4<sup>th</sup>
- D. 3<sup>rd</sup>
- E. 1<sup>st</sup>

**88. Binomial nomenclature was first time proposed by:**

- A. Charles Darwin(1859)
- B. Rodolph virchow (1855)
- C. Louis Pasteur (1862)
- D. Carlous Linnaeus (1707)
- E. Robert brown (1773)

**89 \_\_\_\_\_ causes amoebic dysentery in humans:**

- A. Pelomyxa palustris
- B. Entamoeba histolytica
- C. Trichonympha
- D. Trypanosoma
- E. Radiolarian ooze

**90. The main process that occurs in the dark reaction in photosynthesis is:**

- A. That water is split
- B. Light energy is converted into chemical energy
- C. That glucose is oxidized
- D. That carbon dioxide is fixed
- E. None of the above



91. \_\_\_\_\_ is commonly known as hook worm:

- A. Ancylostoma duodenale
- B. Ascaris lumbricoides
- C. Enterobius vermicularis
- D. Hirudinaria
- E. Wuchereria

92. Ileum Is about \_\_\_\_\_ long :

- A. 3.6 centimeters
- B. 3.6 millimeters
- C. 3.6 inches
- D. 3.6 meters
- E. 3.6 kilometers



93. The Latin words of the name given to a human being, Homo Sapiens, include the:

- A. Genus and family
- B. Family and order
- C. Order and class
- D. Genus and class
- E. Genus and species

94. In paper chromatography xanthophylls will give \_\_\_\_\_ color:

- A. Orange
- B. Grey
- C. Yellow
- D. Blue-green
- E. Yellow-green

95. Which of the following bones are present in the palm of hand:

- A. Carpals
- B. Metacarpals
- C. Phalanges
- D. Tarsal
- E. Radlus

96. Which blome contains maples, Oaks, and bears:

- A. Tundra
- B. Tropical rain forest
- C. Temperate grasslands
- D. Taiga
- E. Deciduous forest

**97. The major sign and symptoms of microcephaly is:**

- A. A Sexual defects
- B. Excessive number of toes
- C. Mental retardation
- D. Small skull in proportion to the normal body size
- E. Split in upper lip and gap in the roof of mouth

**98. The reaction involved in chemotropic nutrition is:**

- A.  $6\text{CO}_2 + 12\text{H}_2\text{O} + \text{light} + \text{chlorophyll} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{H}_2\text{O} + 6\text{CO}_2$
- B.  $2\text{H}_2\text{S} + \text{CO}_2 + \text{light} \rightarrow (\text{CH}_2\text{O})_n + \text{H}_2\text{O} + 2\text{S}$
- C.  $\text{NH}_4 + 3\text{O}_2 + \text{light} \rightarrow 2\text{NO}_2^- + 2\text{H}_2\text{O} + 4\text{H}^+ \text{ energy}$
- D.  $\text{CH}_3\text{-COOH} + \text{enzyme} \rightarrow \text{CH}_3\text{CHO} + \text{CO}_2$
- E.  $5\text{GA3P} + 3\text{ATP} \rightarrow 3\text{RuBP} + 3\text{ADP} + 2\text{Pi}$

**99. The muscles attached to the bones are:**

- A. Voluntary and smooth
- B. Involuntary and smooth
- C. Voluntary and striated
- D. Involuntary and striated
- E. Smooth and striated

**100. An organism appears to be a segmented worm. Upon observation it is determined that the organism has a closed circulation, a mouth and an anus ,and does not have an exoskeleton. The organism most likely belongs to the phylum:**

- A. Mollusca
- B. Annelida
- C. Echinodermata
- D. Arthropoda
- E. Chordate





## NTS TESTING SERVICE NTS ANSWERE KEY 2010

Question#	Correct Choice	Question#	Correct Choice	Question#	Correct Choice	Question#	Correct Choice
1	C	26	D	51	C	76	D
2	D	27	B	52	C	77	A
3	D	28	D	53	C	78	D
4	B	29	D	54	C	79	A
5	B	30	B	55	C	80	C
6	E	31	E	56	A	81	E
7	A	32	D	57	B	82	E
8	C	33	C	58	E	83	B
9	C	34	E	59	B	84	C
10	E	35	D	60	B	85	D
11	E	36	B	61	E	86	C
12	B	37	E	62	B	87	E
13	B	38	B	63	C	88	D
14	E	39	B	64	D	89	B
15	A	40	B	65	E	90	D
16	D	41	C	66	A	91	A
17	C	42	D	67	D	92	D
18	B	43	E	68	C	93	E
19	B	44	A	69	B	94	C
20	E	45	C	70	C	95	B
21	D	46	B	71	B	96	E
22	B	47	A	72	A	97	D
23	C	48	E	73	D	98	C
24	A	49	C	74	A	99	C
25	D	50	A	75	D	100	B





# Past Paper 2011

# NATIONAL TESTING SERVICE



## NTS past paper 2011

### ENGLISH

**Identify the word or phrase that needs to be changed for the sentence to be correct :**

1. How will they got across the river if the ferry is not running ? No error  
A B C D E

2. Children depend on their parents for food and clothing. No error  
A B C D E

**Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters.**

3. **ASSERTION :**

- a. Statement
- b. Denial
- c. Claim
- d. Unrest
- e. Tiring

4. **OBSTINATE :**

- a. Persistent
- b. Constant
- c. **daring**
- d. Courageous
- e. flexible

**Choose the word most similar in meaning to be capitalized ones .**

5. **UNAMBIGUOUS:**

- a. stagnant
- b. Hidden
- c. clear
- d. Muddy
- e. Grubby

6. **WRECKED:**

- a. defined
- b. Developed
- c. registered
- d. ruined
- e. Counted





**Questions 7-8 are based on the following passage.**

The fact that we were all as safe as kittens under a cook-stove did not, however, assuage in the least the fine despair and the grotesque desperation which seized upon the residents of the East Side when the cry spread like a grass fire that the dam had given way. Some of the most dignified, staid, cynical, and clear thinking men in town abandoned their wives, stenographers, homes, and offices and ran east. There are few alarms in the world more terrifying than the dam has broken! There are few persons capable of stopping to reason when that Marion cry strikes upon their ears, even persons who live in towns no nearer war five hundred miles to a dam.

**7. The phrase "spread like a grass fire" means**

- a. rapid spread
- b. fire fighting
- c. grass growth
- d. dreadful sight
- e. hidden news

**8. Identify the phrase in which the people of the East Side experienced one of the deadliest fears of their lives:**

- a. "The dam has been destroyed"
- b. "The dam is safe"
- c. "The dam has broken"
- d. "The dam has not broken"
- e. "The dam is overflowing"

**Complete the sentence by choosing the most appropriate word, from the given lettered choices (A to E) below each.**

**9. The injured player was taken \_\_\_\_\_ the field.**

- a. Of
- b. Off
- c. out
- d. In
- e. By

**10. The box is \_\_\_\_\_ green outside and white inside .**

- a. Carved
- b. Created
- c. Painted
- d. Chiseled
- e. Molded



**PHYSICS**

**11 . A car starts from rest and moves with a constant acceleration. During the 5th second of its motion, it covers a distance of 36 meters. What is the acceleration of the car?**

- a.  $12.5 \text{ m/s}^2$
- b.  $8 \text{ m/s}^2$
- c.  $15 \text{ m/s}^2$
- d.  $16 \text{ m/s}^2$
- e.  $14 \text{ m/s}^2$

**12. Law of conservation of momentum states that:**

- I. if there is no external force applied to a system, then the total momentum of that system remains constant
- II. if there is an external force applied to a system, then the total momentum of that system remains constant
- III . if there is no external force applied to a system, then the total momentum of that system keeps changing

- A. I only
- B. I and II only
- C. I and III only
- D. III only
- E. I,II and III

**13. Projectile must be launched at which angle with the horizontal to attain maximum range?**

- a.  $90^\circ$
- b.  $45^\circ$
- C.  $75^\circ$
- D.  $105^\circ$
- E.  $145^\circ$

**14 . A player throws a ball at an initial velocity of 36 m/second. The main distance the ball can reach (assume ball is caught at the same height at which it was released) is**

- A. 146 m
- B. 130 m
- C. 132 m
- D. 129 m
- E. 145 m



**15 . Artificial gravity can be applied by which of the following ways so that normal force of gravity can be generated for the astronaut:**

- a. rotating the space craft
- b. back and forth motion space craft
- c. up and down movement of space craft
- d. keeping the space craft stationary
- e. all of the above

16. A 70 kg man runs up a hill through a height of 3 meters in 2 seconds. Its average power output is ( $g = 10\text{m/sec}$ ):

- a. 1050 watts
- B. 970 watts
- c. 1500 watts
- d. 1300 watts
- e. 500 watts

17. The torque will be greater if:

- a. both magnitude of force and Innent arm are smaller
- b. both magnitude of force and moment arm are greater
- c. only magnitude of force is greater
- d. only moment arm is greater
- e. none of the above

18. Example (s) of spin motion is/are:

- a. the daily rotation of the earth about its own axis
- b. jumping of a paratrooper from an helicopter
- c. flow of a viscous liquid
- d. rotation of flywheel about its axle
- e. both A & B.

19. The sum of Kinetic Energy and the potential Energy is always constant provided:

- a. there is some force of friction involved during the motion of the body
- b. there is no force of friction involved during the motion of the body
- c. there is greater force of friction involved during the motion of the body
- d. both A&B
- e. none of above

20. A block with a mass of 0.1 kg is attached to a spring and placed on a horizontal frictionless table. The spring is stretched 20 cm when a force of 5 N is applied.. The spring constant is:

- A.  $50\text{ N m}^{-1}$
- b.  $25\text{ N m}^{-1}$
- c.  $75\text{ N m}^{-1}$
- d.  $100\text{ N m}^{-1}$
- e.  $125\text{ N m}^{-1}$



21. If the resultant intensity of the interfering waves is zero or less than the intensity of the individual wave, then this type of interference is:

- a. destructive interference
- b. constructive interference
- c. stable interference
- d. both A&B
- e. none of the above

22. The smaller the distance of the object from the eye, the visual angle will be:

- a. smaller
- b. greater
- c. constant
- d. Negligible
- e. none of the above

23. A system absorbs 2000 Joules of heat and delivers 1200 Joules of work while losing 200 Joules of heat by conduction to the atmosphere. The change in the internal energy of the system is:

- a. 300 J
- b. 600 J
- c. 1200 J
- d. 900 J
- e. 1500 J

24. The efficiency of the carnot's Engine Working between  $150^{\circ}\text{C}$  and  $50^{\circ}\text{C}$  is:

- a. 22.3%
- b. 20.0%
- c. 23.6%
- d. 30.6%
- e. 33.6%

25. An electron is situated midway between two parallel plates 0.5 cm apart. One of the plates is maintained at a potential of 60 volts above the other. The force on the electron is ( $e = -1.6 \times 10^{-19}$ )

- A.  $1.92 \times 10^{-15} \text{ N}$
- B.  $3.00 \times 10^{-15} \text{ N}$
- C.  $1.92 \times 10^{-15} \text{ N}$
- D.  $3.00 \times 10^{-15} \text{ N}$
- E.  $5.00 \times 10^{-15} \text{ N}$



26. The principle of a capacitor is based on which of the following facts?

- a. potential of a conductor is greatly increased with a decrease in the charge in it
- b. potential of a conductor is greatly reduced with an increase in the charge in it.
- c. potential of a conductor is greatly increased without affecting the charge in it.
- d. potential of a conductor is greatly reduced without affecting the charge in it
- e. potential of a conductor is greatly increased with an increase in the charge in it.

27. A current of 4.4 amperes is following in a wire. How many electrons pass a given point in the wire in one second, if the charge on an electron is  $1.6 \times 10^{-19}$  coulomb?

- a.  $1.5 \times 10^{19}$  electrons
- b.  $2.75 \times 10^{19}$  electrons
- c.  $3.25 \times 10^{19}$  electrons
- d.  $2.75 \times 10^{19}$  electrons
- e.  $3.25 \times 10^{19}$  electrons

**28. An electric kettle of 1500 watts rating boils a certain quantity of water in 5 minutes the heat which is generated for boiling this water is :**

- a.  $45 \times 10^4$  Joules
- b.  $48 \times 10^4$  Joules
- c.  $56 \times 10^4$  Joules
- d.  $36 \times 10^4$  Joules
- e.  $59 \times 10^4$  Joules

**29. A force which is experienced in a magnetic field depends on:**

- a. magnitude of charge Q
- b. speed of the moving charge V
- c. magnitude field of induction B
- d. all of the above
- e. none of the above

**30. A coil of 600 turns is threaded by a flux of  $8 \times 10$  webers, if this flux is reduced to  $3 \times 10^*$  webers in 0.015 seconds. The average induced e.m.f. is:**

- a. -2.0 volts
- b. -3.0 volts
- c. +2.0 volts
- d. +2.5 volts
- e. +3.0 volts

**31. Which of the following work (s) on the principle of wheat Stone Bridge?**

- a. slide-wire bridge
- b. Meter-bridge
- c. post office box
- d. all of the above
- e. none of the above

**32. The sinusoidal wave from can be varied by using which of the following parameters?**

- I. Frequency of the carrier wave
- II. Amplitude of the carrier wave
- III. Phase angle

- a. I only
- b. I and II only
- c. I and III only
- d. III only
- e. I, II and III

**33. A semi conductor photodiode is a:**

- a. reverse biased junction diode
- b. forward biased junction diode
- c. half wave rectifier
- d. full wave rectifier
- e. transistor



34. The speed of light is very nearly equal to;

- a.  $5 \times 10^8$  m/sec
- b.  $3 \times 10^{16}$  m/sec
- c.  $4 \times 10^8$  m/sec
- d.  $3 \times 10^8$  m/sec
- e.  $7 \times 10^8$  m/sec

35. Radiation can cause:

- a. leukemia
- b. radiation sickness
- c. skin cancer
- d. gene mutations
- e. all of the above

36. Application/s of laser is/are:

- a. To perform precision surveying and length measurements
- b. as a potential energy source for including nuclear fusion reactions
- c. for telephone communications along optical fibers
- d. for precision cutting of metals and other materials
- e. all of the above

37. A nucleus consists of 11 protons and 12 neutrons. The conventional symbol of nucleus is:

- a.  ${}_{11}^{12}\text{Na}$
- b.  ${}_{11}^{23}\text{Ca}$
- c.  ${}_{11}^{23}\text{Na}$
- d.  ${}_{11}^{12}\text{Ca}$
- e.  ${}_{11}^{12}\text{Ca}$

38. The dimensions of acceleration are:

- a.  $\text{LT}^{-1}$
- b.  $\text{LT}^{-2}$
- c.  $\text{L}^3$
- d.  $\text{L}^2$
- e.  $\text{LT}^2$

39. All of the following is/are scalar quantity/ies, expected:

- a. Temperature
- b. Density
- c. volume
- d. force
- e. speed



40.  $\vec{R}_1$  and  $\vec{R}_2$  are two position vectors making angles  $\alpha$  and  $\theta$  with positive X axis respectively. Their vector product is:  $R_1 = 4\text{cm}$ ,  $R_2 = 3\text{cm}$ ,  $\alpha = 30^\circ$ ,  $\theta = 90^\circ$

- a.  $12\sqrt{3}$
- b.  $6\sqrt{3}$
- c.  $6\sqrt{12}$
- d.  $12\sqrt{6}$
- e.  $3\sqrt{6}$



### CHEMISTRY

41. Which of the following statements is true of Amorphous solids?

- a. They possess symmetry
- b. They are isotropic
- c. They are anisotropic
- d. They cleave along a particular direction
- e. They have definite shape

42. Which of the following statements is correct?

- a. Faraday's experiment indicates the existence of electrons
- b. Crookes tube experiment shows the presence of electrons and protons in the atoms.
- c. Radioactivity confirms the presence of electrons and protons
- d. Chadwick experiment shows the presence of neutrons
- e. All of the above

43. "In an atom no two electrons can have the same set of four Quantum numbers" is stated by:

- a. Heisenberg's uncertainty principle
- b. Aufbau Principle
- c. Pauli's Exclusion principle
- d. Hund's Rule
- e.  $(n+1)$  Rule

44. Which of the following molecules have zero Dipole moments?

- a.  $\text{CCl}_4$
- b.  $\text{CO}_2$
- c.  $\text{Cl}_2$
- d.  $\text{C}_6\text{H}_6$
- e. All of the above



**45. Bond energy:**

- I. Is energy required to break a bond between two atoms in a diatomic molecule
- II. Is taken as the energy released in forming a bond
- III. Is the measure of the strength of bond
- a. I only
- b. I and II only
- c. I and III only
- d. III only
- e. I, II and III



**46. Oxidation number of Nitrogen in  $\text{HNO}_3$  is:**

- a. +4
- b. +2
- c. +6
- d. +5
- e. +7

**47. A certain chemical reaction follows the following rate law:**

$$\text{Rate} = k[A][B]^2$$

The order of reaction is:

- a. 1
- b. 2
- c. 3
- d. 4
- e. 5

**48. Only two elements are present in:**

- a. Period -1
- b. Period -2
- c. Period -3
- d. Period -4
- e. Period -5

**49. The unit of rate of reaction is:**

- a.  $\text{Mole (dm}^3\text{) sec}$
- b.  $\text{Mole (dm}^3\text{)}^{-1} \text{ sec}^{-1}$
- c.  $\text{Mole (dm}^3\text{)}^{-2} \text{ sec}^{-1}$
- d.  $\text{Mole (dm}^3\text{)}^{-2} \text{ sec}^{-2}$
- e.  $\text{Mole (dm}^3\text{)}^{-1} \text{ sec}^{-2}$

**50. Hydrides which are prepared by passing hydrogen gas over hot alkali metals or alkaline earth metals are called:**

- a. Covalent hydrides
- b. Ionic hydrides



- c. Complex hydrides
- d. Metallic hydrides
- e. Polymeric hydrides

**51. When Gypsum is heated to about 100°C, it losses some water of crystallization and becomes:**

- a. Epsom salt
- b. Kieserite
- c. Plaster of paris
- d. Bleaching powder
- e. Caustic soda

**52. The chemical property (ies) of Sulphuric Acid is/are:**

- a. Acidic properties
- b. Oxidizing properties
- c. Dehydrating properties
- d. Sulfonating properties
- e. All of the above



**53. Complete the following equation:**

**A + H<sub>2</sub> SO<sub>4</sub> dilute ----- .**

- a. Al<sup>2</sup> (SO<sub>4</sub>)<sub>3</sub> + H<sub>2</sub>O
- b. Al<sup>2</sup> (SO<sub>4</sub>)<sub>3</sub> + H<sub>2</sub>
- c. Al<sup>2</sup> (SO<sub>4</sub>)<sub>3</sub> + H<sub>2</sub>O + SO<sub>2</sub>
- d. Al<sup>2</sup> (SO<sub>4</sub>)<sub>3</sub> + H<sub>2</sub> + SO<sub>2</sub>
- e. None of the above

**54. The electronic configuration of iron is:**

- a. 1s<sup>2</sup>, 2s<sup>2</sup>, 2p<sup>6</sup>, 3s<sup>2</sup>, 3p<sup>6</sup>, 3d<sup>5</sup>, 4s<sup>2</sup>
- b. 1s<sup>2</sup>, 2s<sup>2</sup>, 2p<sup>6</sup>, 3s<sup>2</sup>, 3p<sup>6</sup>, 3d<sup>5</sup>, 4s<sup>1</sup>
- c. 1s<sup>2</sup>, 2s<sup>2</sup>, 2p<sup>6</sup>, 3s<sup>2</sup>, 3p<sup>6</sup>, 3d<sup>6</sup>, 4s<sup>2</sup>
- d. 1s<sup>2</sup>, 2s<sup>2</sup>, 2p<sup>6</sup>, 3s<sup>2</sup>, 3p<sup>6</sup>, 3d<sup>3</sup>, 4s<sup>2</sup>
- e. 1s<sup>2</sup>, 2s<sup>2</sup>, 2p<sup>6</sup>, 3s<sup>2</sup>, 3p<sup>6</sup>, 3d<sup>2</sup>, 4s<sup>2</sup>

**55. The Chemical name of the baking powder is :**

- a. Sodium carbonate
- b. Sodium bicarbonate
- c. Sodium hydrogen carbonate
- d. Sodium hydroxide e. Sodium chloride

**56. IUPAC Nomenclature of .CH<sub>3</sub>-CH=CH-CH<sub>2</sub> - CH = CH<sub>2</sub> is:**

- a. 2 - pentene
- b. 1,4 - hexadiene
- c. 3-Methyl butane
- d. 1, 3, 5 - heptatriene

e. 1, 3, 6 hexatriene

57. Benzene can be prepared--

- a. From Petroleum
- b. From Coal
- c. From Acetylene
- d. From Phenol
- e. All of the above

58. The electrophilic reactions of Benzene are:

- a. Halogenation
- b. Nitration
- c. Sulphonation
- d. Alkylation and acylation
- e. All of the above



59. - OR is the nucleophile of:

- a. Alcohols
- b. Esters
- c. Cyanides
- d. Ethers
- e. Aldehydes

60. Primary Alcohol is produced by reactions of Grignard's reagent with----- followed by hydrolysis in an acidic medium.

- a. Carbon dioxide
- b. Formaldehyde
- c. Acetaldehyde
- d. Ketone
- e. Methyl chloride

61. An ester is prepared by the reaction of:

- a. Two alcohols
- b. Carboxylic acid and alcohol
- c. Ketone and alcohol
- d. Aldehyde and alcohol
- e. All of the above

62. Which of the following acids is used for Etching glass?

- a. Hydrochloric acid
- b. Nitric acid
- c. Hydrofluoric acid
- d. Sulphuric acid
- e. Acetic acid

63. By heating 25g of limestone ( $\text{CaCO}_3$ ), the weight of carbon dioxide produced is.

- a. 14g
- b. 719
- c. 11g
- d. 2g
- e. 10g

64. A child's balloon has a volume  $3.80 \text{ dm}^3$ , when temperature is  $35^\circ\text{C}$ . If the balloon is put in refrigerator and cooled to  $5^\circ\text{C}$ , the approximate volume of the balloon is (assume pressure inside the balloon is equal to atmospheric pressure):

- a.  $3.00 \text{ dm}^3$
- b.  $3.43 \text{ dm}^3$
- c.  $3.08 \text{ dm}^3$
- d.  $3.25 \text{ dm}^3$
- e.  $0.54 \text{ dm}^3$

65. If the matter in a given system at a given condition is divided into two equal parts, then the value of the extensive properties will become:

- a. Double of the original value
- b. Half of the original value
- c. Remain the same as the original value
- d. One-fourth of the original value
- e. Heat of formation

66. The measurement of heat absorbed or given out in a chemical reaction is referred to as:

- a. Enthalpy
- b. Endothermic reaction
- c. Exothermic reaction
- d. Thermochemistry
- e. Heat of formation



67. In a reaction  $\text{A} + \text{B} \rightleftharpoons 2\text{C}$

When equilibrium was attained, the concentration was  $[\text{A}] = [\text{B}] = 4 \text{ moles/dm}^3$   $[\text{C}] = 6 \text{ moles/dm}^3$

The equilibrium constant  $K_c$  of this reaction is:

- a. 1.25
- b. 2.25
- c. 3.25
- d. 2.75
- e. 3.75

68. If the ratio of initial concentration of the reagents is greater than the  $K_c$  then

- a. The reaction will shift towards the reserve direction
- b. More quantity of products is obtained
- c. The ratio increases to the value of  $K_c$

- d. Equilibrium has been attained
- e. There is no shifting of reaction

69. Aqueous solution of Naz Coz is:

- a. Acidic
- b. Alkaline
- c. Both Acidic and Alkaline
- d. Neutral
- e. None of the above

70. Which of the following is TRUE regarding Methyl Alcohol?

- a. It is a colorless, volatile, thin liquid with specific gravity 0.796 at 15°C.
- b. It is used for low temperature thermometers and as a fuel substitute
- c. It is extensively used in the formation of different beverages.
- d. It is used as a base for perfumes
- e. It is used as an antiseptic and disinfectant

## BIOLOGY

71. Which of the following fungus is utilized in the baking Industry?

- a. Mushrooms
- b. Yeast
- c. Bread mold
- d. Penicillium
- e. Penicillium Neomycin

72. Which of the following is included in Bryophytes?

- a. Mosses
- b. Club mosses
- c. Ferns
- d. Seed plants
- e. Horse tails

73. Species of phylum platyhelminthes are:

- a. Round worms
- b. Flat worms
- c. Hook worms
- d. Thread worms
- e. Pin worms

74. A characteristics features of Echinoderm is:

- a. Canal system



- b. Water vascular system
- c. Tracheal system
- d. Blood vascular system
- e. None of the above

75. **The Light dependent reaction of photosynthesis occurs in :**

- a. Stroma of chloroplast
- b. Guard cells of stomata
- c. Thylakoid membrane of chloroplast
- d. Cytoplasm of leaf cell
- e. None of the above

76. **The end product of Glycolysis is:**

- a. Glucose-6-phosphate
- b. Fructose-6-phosphate
- c. Pyruvate
- d. 3-Phosphoglycerate
- e. Phosphoglyceraldehyde

77. **The massive accumulation of blood within a tissue is called as:**

- a. Haemorrhage
- b. Haematoma
- c. Hepatoma
- d. Haemacel
- e. Haematemesis

78. **Malpighian tubules are involved in excretion in:**

- a. Cockroach
- b. Earthworm
- c. Human
- d. Planaria
- e. Hydra



79. **Growth movement caused in response to gravitational stimulus is called:**

- a. Nutation
- b. Geotropism
- c. Nastic movement
- d. Tropic movement
- e. Turgor movement

80. **A psychological condition usually seen in girls and young women with loss of appetite is :**

- a. Obesity
- b. Malnutrition
- c. Anorexia Nervosa
- d. Dyspepsia
- e. Peptic ulcer

81. **Haemoglobin carries more oxygen than plasma by:**

- a. 50 times

- b. 20 times
- c. 70 times
- d. 100 times
- e. 200 times

82. **Bones of the skull are joined by:**

- a. Fixed joints
- b. Sliding joints
- c. Pivot joints
- d. Hinge joints
- e. Gliding joints



83. **Cytoplasmic Localization is a consequence of:**

- a. Fertilization
- b. Cleavage
- c. Morula
- d. Blastula
- e. Gastrula

84. **Highly condensed portions of the chromatin are called:**

- a. Euchromatin
- b. Hetero chromatin
- c. Nucleosome
- d. Super coils
- e. None of the above

85. **The disease in which patients passed urine that rapidly turned black on exposure to air is called:**

- a. Phenyl Ketonuria
- b. Alkaptonuria
- c. Sickle cell anaemia
- d. Hemophilia
- e. Anuria



86. **Diplotene is the sub-stage of:**

- a. Anaphase I
- b. Telephone I
- c. Prophase I
- d. Metaphase I
- e. All of the above

87. **Deficient production of hormones by adrenal glands results in:**

- a. Cushing's syndrome
- b. Addison's disease
- c. Diabetes Mellitus
- d. Goiter
- e. Empilepsy

88. All of the following are sexually transmitted diseases except:

- a. Syphilis
- b. Gonorrhoea
- c. Alzheimer's Disease
- d. Genital Herpes
- e. AIDS

89. The producers of pond ecosystem include:

- a. Bacteria
- b. Zooplankton
- c. Fungi
- d. Phytoplankton
- e. All of the above

90. Erythroblastosis foetalis occurs when:

- a. Mother is R<sup>+</sup> positive and baby is R<sup>-</sup> negative
- b. Mother is Rh negative and baby is R<sup>+</sup> positive
- c. Both mother and baby are R<sup>-</sup> negative
- d. Both mother and baby are Rh positive
- e. All of the above statements are true

91. Amniocentesis is performed between the:

- a. 16th and 18th week of gestation
- b. 1st and 2nd week of gestation
- c. 30th and 32nd week of gestation
- d. 37th and 38th week of gestation
- e. After the delivery of the baby

92. Lamarck's theory is based on all of the following points EXCEPT:

- I. Effects of environments
  - II. Use and disuse of organs
  - III. Natural selection
  - IV. Inheritance of acquired character
- a. I only
  - b. II only
  - c. III only
  - d. IV only
  - e. I, II, and IV

93. In pea plants, the allele for round seeds (R) is dominant to the allele for wrinkled seeds (r) and the allele for yellow seeds (Y) is dominant to the allele for green seeds (y). A doubly heterozygous, round, yellow-seeded plant is crossed with a green, wrinkled-seeded plant.

What percentage of the F<sub>1</sub> generation are recombinants?

- a. 0%
- b. 25%
- c. 50%
- d. 75%
- e. 100%





94. **Chicken pox is caused by:**

- a. Hepatitis A virus
- b. Varicella zoster virus
- c. Influenza virus
- d. Human immunodeficiency virus
- e. Rabies virus

95. **Lysosomes function in:**

- a. Protein synthesis
- b. Processing
- c. Intracellular digestion
- d. Lipid synthesis
- e. Carbohydrate synthesis



96. **The viruses are:**

- a. Cellular
- b. Prokaryotes
- c. Non-cellular
- d. Eukaryotes
- e. Visible with naked eye

97. **Bacterial pilli help in:**

- a. Locomotion
- b. Conjugation
- c. Phagocytosis
- d. Pinocytosis
- e. Exocytosis

98. **Trypanosoma belongs to class :**

- a. Sarcodina
- b. Flagellata
- c. Ciliata
- d. Suctoria
- e. Sporozoa


99. **A bacteriophage consists solely of:**

- a. DNA and protein
- b. RNA and protein
- c. RNA only
- d. Protein only
- e. DNA only

100. **which of the following factors affect enzyme activity?**

- a. Temperature
- b. pH
- c. Concentration of substrate
- d. Radiation
- e. All of the above

# National Testing Service Past Papers

<div>  <p><b>NTS TESTING SERVICE</b> NTS ANSWER KEY 2011</p> <p>Educational Testing Service</p> </div>							
Question #	Correct Choice	Question#	Correct Choice	Question#	Correct Choice	Question	Correct Choice
1	B	26	D	51	C	76	C
2	E	27	B	52	E	77	B
3	B	28	A	53	B	78	A
4	E	29	D	54	C	79	B
5	C	30	A	55	B	80	C
6	D	31	D	56	B	81	C
7	A	32	E	57	E	82	A
8	C	33	A	58	E	83	B
9	B	34	D	59	D	84	B
10	C	35	E	60	B	85	D
11	B	36	E	61	B	86	C
12	A	37	C	62	C	87	B
13	B	38	B	63	C	88	C
14	C	39	D	64	B	89	D
15	A	40	B	65	B	90	B
16	A	41	B	66	D	91	A
17	B	42	E	67	B	92	C
18	E	43	C	68	A	93	C
19	B	44	E	69	B	94	B
20	B	45	E	70	A	95	C
21	A	46	D	71	B	96	C
22	B	47	C	72	A	97	B
23	B	48	A	73	B	98	B
24	C	49	B	74	B	99	A
25	A	50	B	75	C	100	E



# Past Paper 2012

# NATIONAL TESTING SERVICE

## NTS past paper 2012

### ENGLISH

**Identify the word or phrase that needs to be changed for the sentence to be correct:**

1. He brought down the tiger with his first shot. No error  
A B C D E

2. The noise of the traffic make it impossible for us to work with the A  
A B C D  
windows open. No error  
E

**Complete the sentences by choosing the most appropriate word, from the given lettered choices (A to E) below each.**

3. He got off his bicycle and \_\_\_\_\_ it through the gate.

- A. walked
- B. jumped
- C. wheeled
- d. repaired

4. Somebody has not turned the tap \_\_\_\_\_.

- A. of
- B. off
- C. over
- D. in
- E. at



**Read the passage to answer questions 5-6**

To inquire after the meaning or object of one's own existence or of creation generally, has always seemed to me absurd from an objective point of view. And yet everybody has certain ideals which determine the direction of his endeavors and his judgments. In this sense, I have never looked upon ease and happiness as ends in themselves-such an ethical basis I call more proper for a herd of swine. The ideals which have lighted me on my way and time after time given me new courage to face life cheerfully, have been Truth, Goodness, and Beauty. Without the sense of fellowship with men of like mind, of preoccupation with the objective, the eternally unattainable in the field of art and scientific research, life would have seemed to me empty. The ordinary objects of human endeavor property, outward success, luxury-have always seemed to me contemptible.

**5. The author of the passage followed which of the following objectives?**

- I. Truth
  - II. Goodness
  - III. Beauty
  - IV. Saints
- A. I Only
  - B. If Only
  - C. I & II Only
  - D. I, II & III Only
  - E. I, II, III, IV



**6. Which of the following is contemptible for the author ?**

- A. truth, goodness, and beauty
- B. property, outward success, luxury
- C. art and scientific research
- D. sense of fellowship with men of like mind
- E. preoccupation with the objective

**Choose the word most similar in meaning to the capitalized one.**

**7. FREIGHT:**

- A. worries
- B. luggage
- C. instruments
- D. foolish
- E. uneasy

**8. HARDSHIP:**

- A. wealth
- B. blessings
- C. gift
- D. suffering
- E. objections

**Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters.**

**9. NEGLIGIBLE:**

- A. significant
- B. untamed
- C. tiny
- D. casual
- E. minute



**10. ELEGANT:**

- A. graceful
- B. unattractive
- C. neat
- D. appeasing
- E. enchanting

**PHYSICS**

**11. Identify the example/s of Static Equilibrium:**

- I. A book lying on a horizontal table
- II. A building
- III. A bridge

- A. I only
- B. II only
- C. III only
- D. II and III only
- E. I, II and III

**12. The mass of earth on the basis of Newton's Law of Gravitation is given by:**

- A.  $M = 9.1 \times 10^{-31} \text{ kg}$
- B.  $M = 1.6027 \times 10^{-27} \text{ kg}$
- C.  $M = 5.98 \times 10^{24} \text{ kg}$
- D.  $M = 6.02 \times 10^{23} \text{ kg}$
- E.  $M = 3 \times 10^3 \text{ kg}$



**13. Fusion and fission reactions are associated with:**

- A. Water or hydal energy
- B. Geothermal energy
- C. Fossil fuel energy
- D. Nuclear energy
- E. Tidal energy

**14. What is the change in gravitational potential energy when 7000 N elevator moves from street level to the top of building 300 m above the street level?**

- A. 2100 J
- B. 21000 J
- C. 210000 J
- D.  $2.1 \times 10^6 \text{ J}$
- E. 210 J



15. A body of mass 0.025 kg attached to a spring is displaced through 0.1 m to the right of equilibrium position. If the spring constant is 0.4 N/m and its velocity at the end of displacement is 0.4 m/sec then its total energy will be:

- A.  $4 \times 10^{-3}$  J
- B. 0.0002 J
- C. 0.000001 J
- D. 0.2 J
- E. 0.04 J

16. The unit of luminous intensity is \_\_\_\_\_.

- A. Mole
- B. Ampere
- C. Kelvin
- D. Candela

17. If  $\vec{A} = 2\mathbf{i} + 3\mathbf{j} - \mathbf{k}$ ,  $\vec{B} = 4\mathbf{i} + 2\mathbf{j} - 2\mathbf{k}$ . Find a vector  $\vec{X}$  parallel to  $\vec{A}$  but has magnitude of  $\vec{B}$  ?  
parallel to

- A.  $\sqrt{12/7} (2\mathbf{i} + 3\mathbf{j} - \mathbf{k})$
- B.  $\sqrt{7/12} (4\mathbf{i} + 2\mathbf{j} - 2\mathbf{k})$
- C.  $\sqrt{7/12} (2\mathbf{i} + 3\mathbf{j} + \mathbf{k})$
- D.  $\sqrt{3/5} (\mathbf{i} + 2\mathbf{j} - 3\mathbf{k})$
- E.  $\sqrt{5/12} (3\mathbf{i} + 5\mathbf{j} - 2\mathbf{k})$

18. If  $\vec{A} = 3\mathbf{i} + 6\mathbf{j} - 2\mathbf{k}$  then the unit vector parallel  $\vec{A}$  will be :

- A.  $3\mathbf{i} + 6\mathbf{j} + 2\mathbf{k} / 7$
- B.  $3/7 \mathbf{i} + 6/7 \mathbf{j} - 2/7 \mathbf{k}$
- C.  $3/7 \mathbf{i} + 6/7 \mathbf{j} + 2/7 \mathbf{k}$
- D.  $7/3 \mathbf{i} + 6\mathbf{j} - 2\mathbf{k}$
- E.  $7/3 \mathbf{i} + 6\mathbf{j} + 2\mathbf{k}$

19. if  $\vec{V} = \lim_{\Delta t \rightarrow 0} \frac{\Delta \vec{r}}{\Delta t}$ , then  $\vec{V}$  will be :

- A. Average velocity
- B. Uniform velocity
- C. Instantaneous velocity
- D. Variable velocity
- E. None of the above



20. A ball is thrown vertically upward with the velocity of 98 m/sec, how high does the ball rise?

- A. 196 m
- B. 2 m
- C. 1/2 m
- D. 490 m
- E. 98 m

21. A particle is projected at an angle of  $45^\circ$  with a velocity of 9.8m/s. The horizontal range will be: ( $g=9.8 \text{ m/s}^2$ ).

- A.  $9.8 \sqrt{2} \text{ m}$
- B.  $9.8 \sqrt{2} \text{ m}$
- C. 9.8 m
- D. 4.9 m
- E. 3.1 m



22. 1 radian = \_\_\_\_\_ degrees .

- A.  $360^\circ$
- B.  $180^\circ$
- C.  $100^\circ$
- D.  $57.3^\circ$
- E.  $0.01745^\circ$

23. If  $\mathbf{I} = \mathbf{r} \times \mathbf{p}$  and  $\mathbf{r}$  = position vector  $\mathbf{P}$  = linear momentum then  $\mathbf{I}$  in the equation will be :

- A. currant
- B. length
- C. angular momantum
- D. torque
- E. displacement

24. The superposition of two light waves is called:

- A. Diffraction
- B. Polarization
- C. Interferonco
- D. Reflection
- E. Absorption

25. A convex lens of focal length 20 cm, is used to form an erect image which is twice as large as the object, the position of the object will be \_\_\_\_\_ from the lens.

- A. 20 cm
- B. 5 cm
- C. 10 cm
- D. 30 cm
- E. 40 cm

26. A system absorbs 1000 Joules of heat and delivers 600 Joules of work, while losing 100 Joules of heat by conduction to the atmosphere, the change in the internal energy of the system will be:

- A. 600 Joules
- B. 900 Joules
- C. 300 Joules
- D. 400 Joules
- E. 1600 Joules



27. \_\_\_\_\_ is a device which makes use of mutual induction for stepping up or down an alternating c.m.f.

- A. Sonometer
- B. Transformer
- C. Ammeter
- D. Voltmeter
- E. Potentiometer

28. In a circuit, there is a current of 5 amp which is changed such that the current falls to zero in 0.1 sec. If an average e.m.f. of 200 volts is induced, the self inductance of the circuit will be:

- A. 4 henrys
- B. 5 henrys
- C. 6 henrys
- D. 7 henrys
- E. 8 henrys

29. The instrument(s) which work on the principle of Wheatstone bridge is/are :

- A. Meter Bridge
- B. The Post Office Box
- C. Carey Foster's Bridge
- D. Callendar
- E. All of the above

30. An ammeter reads up to 1 A. Its internal resistance is  $0.81 \Omega$ . To increase the range to 10 A, the value of the required shunt is:

- A.  $0.3 \Omega$
- B.  $0.9 \Omega$
- C.  $0.09 \Omega$
- D.  $0.03 \Omega$
- E.  $1.3 \Omega$

31. Electromagnetic waves are produced by:

- A. motion of electric and magnetic fields
- B. chargeless particles
- C. a static charge
- D. heat
- E. none of the above



32. The energy of an X-ray quantum of wavelength  $1.0 \times 10^{-10} \text{ m}$  is.

- A.  $1.99 \times 10^{-15} \text{ J}$
- B.  $3 \times 10^8 \text{ J}$
- C.  $6.6 \times 10^{-34} \text{ J}$
- D.  $19.89 \times 10^{-26} \text{ J}$
- E. 1.99 Joules

33. The shortest wavelength photon emitted in balmer series is :

- A.  $1.0974 \times 10^{-7} \text{ m}$
- B. 4 nm
- C. 364.6 nm
- D. 3.64 m
- E. 480 nm

34. To remove the huge amount of heat energy in nuclear reactor, \_\_\_\_\_ are used.

- A. Core
- B. Control rods
- C. Shielding
- D. Moderators
- E. Coolants

35. The half life of  $C^{14}$  is about:

- A. 1637 years
- B. 892 years
- C. 10 years
- D. 100 years
- E. 5730 years

36. The equation  $\Delta U = \Delta Q$  refers to:

- A. Isothermal process
- B. Adiabatic process
- C. Isochoric process
- D. Isobaric process
- E. Carnot cycle



37. Two capacitors  $C_1 = 3\mu f$  and  $C_2 = 6\mu f$  are in series across a 90 volts D.C supply. The total capacitance is given by:

- A.  $9\mu f$
- B.  $2\mu f$
- C.  $10\mu f$
- D.  $90\mu f$
- E.  $5\mu f$

38. Kinetic energy of a charged particle decreases by 10 J as it moves from a point at potential 100 V to 200 V. The charge on the particle is:

- A.  $10^{-3} C$
- B.  $10^{-2} C$
- C.  $10^{-1} C$
- D.  $10^5 C$
- E.  $10^{-9} C$

39. A 100 watt bulb is operated by 240 volts, the current through the bulb will be:

- A. 2.4 A
- B. 240 A
- C. 0.416 A
- D. 41.6 A
- E. 416 A

40. A bulb having a resistance of  $150 \Omega$  is connected to a 225 volt source, the current in the bulb will be:

- A. 1.5 A
- B. 10 A
- C. 3.7350 A
- D. 250 A
- E. 100 A

**CHEMISTRY**



41. If the reaction :



is described as being of zero order with respect to P, it means that.

- A. P is a catalyst in this reaction
- B. No P molecules possesses sufficient energy to react
- C. he concentration of P does not change during the reaction
- D. The rate of reaction is independent of the concentratio. of P
- E. The rate of reaction is proportional to the concentration of Q

42. The number of moles of solute dissolved per liter of solution is called:

- A. Normality
- B. Molality
- C. Molarity
- D. Percentage composition
- E. Mole fraction

43. The oxidation number of all the elements in free state is \_\_\_\_\_.

- A. 1
- B. 3
- C. 0
- D. -1
- E. -3

44. Sum of all the exponents of molar concentration of the reactant present in the rate equation is known as \_\_\_\_\_.

- A. molecularity
- B. order of reaction
- C. rate of reaction
- D. Gradient
- E. slope

45. According to \_\_\_\_\_ "the properties of elements are the periodic function of their atomic number".

- A. Mendeleev's periodic law
- B. Newland's law of octaves
- C. Dobereiner's triads
- D. Lothar Meyer's classification
- E. Modern periodic law

46. 2 grams of  $H_2$  molecule contain \_\_\_\_\_ molecules .

- A.  $12.04 \times 10^{23}$
- B.  $6.02 \times 10^{23}$
- C.  $3.01 \times 10^{23}$
- D. 1.008
- E. 2



47. Comparative rates of diffusion of He and  $SO_2$ , will be \_\_\_\_\_.

- A. 8
- B. 2
- C. 4
- D. 16
- E. 64

48. The unit of viscosity is \_\_\_\_\_.

- A. Joule
- B.  $N/m^2$
- C. dynes/cm
- D. poises
- E. ergs

49. The maximum possible number of electrons a shell 'n' can accommodate is given by .

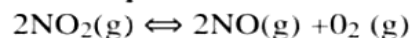
- A. n
- B.  $n^2$
- C.  $2n^2$
- D.  $N^3$
- E.  $3n^2$



50.  $\text{Cl} + e \rightarrow \text{Cl}^-$   $\Delta H = -348\text{kJ/mol}$  the value  $-348\text{kJ/mol}$  in this case will be:

- A. Ionization energy
- B. Electronegativity
- C. Electron affinity
- D. Entropy
- E. Free energy

51. Nitrogen dioxide decomposes on heating according to the following equation



When 4 mole of nitrogen dioxide were put into a  $1\text{ dm}^3$  container and heated to a constant temperature, the equilibrium mixture contained 0.8 mole of oxygen.

What is the numerical value of the equilibrium constant,  $K_c$ , at the temperature of the experiment?

- A.  $0.8^2 \times 0.8 / 4^2$
- B.  $1.6 \times 0.8 / 2.4^2$
- C.  $1.6^2 \times 0.8 / 4^2$
- D.  $1.6^2 \times 0.8 / 2.4^2$



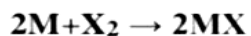
52.  $\text{H}_2\text{S}$  is an example of \_\_\_\_\_ hydride .

- A. ionic
- B. covalent
- C. complex
- D. metallic.
- E. border-line hydride

53. The formula of "rock salt" is:

- A.  $\text{NaOH}$
- B.  $\text{NaHCO}_3$
- C.  $\text{Na}_2\text{CO}_3$
- D.  $\text{CuSO}_4$
- E.  $\text{NaCl}$  .

54. For the reaction (where X' Is halogen)



It M is metal, it is more likely to be:

- A. Alkaline earth metal
- B. Alkali metal
- C. Outer transition metal
- D. Inner transition metal
- E. None of the above

55. Which one is not true for  $H_2SO_4$ ?

- A. Acid
- B. Oxidizing agent
- C. Nitrating agent
- D. Dehydrating agent
- E. Sulphonating agent



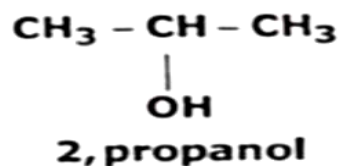
56. Transition elements and their compounds are commonly used as catalysts due to

- A. involvement of inner-d-orbitals
- B. due to the presence of unpaired electron
- C. d-d transition of electrons
- D. variable oxidation state
- E. suitable surface area

57. The C-C bond distance is

- A.  $1.10 \text{ \AA}$
- B.  $1.20 \text{ \AA}$
- C.  $1.30 \text{ \AA}$
- D.  $1.54 \text{ \AA}$
- E.  $1.34 \text{ \AA}$

58.



are examples of \_\_\_\_\_.

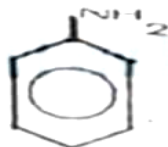
- A. Chain isomerism
- B. Position isomerism
- C. Functional group isomerism
- D. Metamerism
- E. Optical isomerism

59.  $\text{CH} \equiv \text{CH} + 2 \text{AgNO}_3 \rightarrow \text{AgC} \equiv \text{CAg} + 2\text{HNO}_3$   
represents \_\_\_\_\_ property of acetylene.

- A. basic
- B. acidic
- C. dehydrating
- D. physical
- F. none of the above



60.



(-NH<sub>2</sub>) on benzene ring is:

- A. meta-directing and deactivating group
- B. Otho-para directing and deactivating group.
- C. othro-para directing and activating group
- D. orthro-directing and activating only
- E. para-directing and deactivating only

61. The stability of carbonium ions follow the order:

- A.  $\text{CH}_3^+ > \text{RCH}_2^+ > \text{R}_2\text{C}^+\text{H} > \text{R}_3\text{C}^+$
- B.  $\text{R}_3\text{C}^+ > \text{R}_2\text{CH}^+ > \text{RC}^+\text{H}_2 > \text{C}^+\text{H}_3$
- C.  $\text{R}_3\text{C}^+ > \text{CH}_3^+ > \text{R}_2^+\text{CH} > \text{R}^+\text{CH}_2$
- D.  $\text{R}_2\text{CH}^+ > \text{CH}_3^+ > \text{RCH}_2^+ > \text{R}_3\text{C}^+$
- E.  $\text{R}_3\text{C}^+ > \text{R}_2\text{CH}^+ > \text{CH}_3^+ > \text{RCH}_2^+$

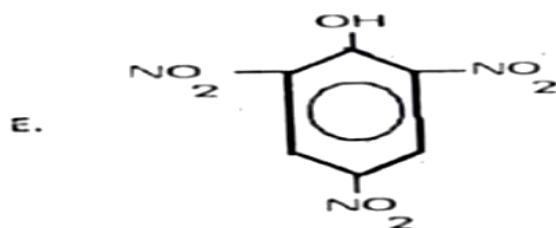
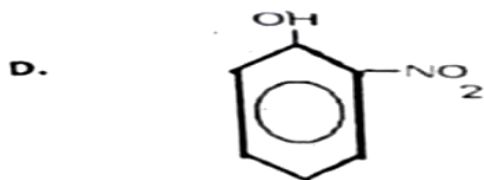
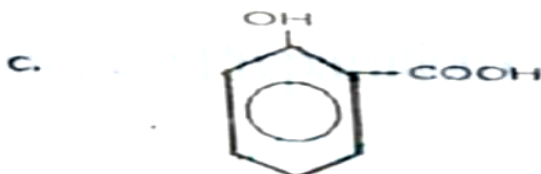
62. RMOX is an organometallic compound, generally known as:

- A. Grignard's Reagent
- B. Baeyer's reagent
- C. Ether
- D. Ester
- E. Aldehyde

63. \_\_\_\_\_ is used as preservative for life specimen.

- A.  $\text{H}_2\text{SO}_4$
- B. Ammonia
- C. Methanol
- D. NaOH
- E. Formalin

64. The structural formula of picric acid is:



65. \_\_\_\_\_ is needed in thyroxine, the hormone of thyroid gland.

- A.  $\text{Mg}^{++}$
- B.  $\text{K}^{+1}$
- C.  $\text{Ca}^{++}$
- D. Iodine
- E. Zinc

66.  $\text{Sp}^3$  hybridization in  $\text{CH}_4$  gives it \_\_\_\_\_ geometry.

- A. Linear
- B. Co planer
- C. Tetra hedral
- D. Trigonal pyramid
- E. Octahedral

67. 1 calories = \_\_\_\_\_ Joules.

- A. 200 Joules
- B. 2000 Joules
- C. 4.184 Joules
- D. 4180 Joules
- E. 3630 Joules

68. The amount of heat provided to a system at constant pressure ( $q_p$ ) is equal to \_\_\_\_\_.

- A. Change in internal energy ( $\Delta E$ )
- B. Change in enthalpy ( $\Delta H$ )
- C. Change in free energy ( $\Delta G$ )
- D. Change in temperature only ( $\Delta T$ )
- E. Change in pressure only ( $\Delta P$ )

69.  $\text{AgCl} \rightleftharpoons \text{Ag} + \text{Cl}$

The  $K_{sp}$  for the reaction will be:

- A.  $K_{sp} = [\text{AgCl}] / [\text{Ag}^+][\text{Cl}^-]$
- B.  $K_{sp} = [\text{Ag}^+][\text{Cl}^-] / [\text{AgCl}]$
- C.  $K_{sp} = [\text{Ag}^+][\text{Cl}^-]$
- D.  $K_{sp} = [\text{agcl}]$
- E.  $K_{sp} = [\text{Ag}^+] / [\text{Cl}^-]$



70. EDTA ion is a \_\_\_\_\_ legend.

- A. Monodentate
- B. Bidentate
- C. Tridentate
- D. Polydentate
- E. None of the above

**BIOLOGY**



71. The secondary and tertiary consumers are also known as:

- A. green plants
- B. herbivores
- C. abiotic factors
- D. decomposers
- E. carnivores

72. Plants absorb it in the form of soluble phosphates. It is present abundantly in growing and storage organs of plants. What is it?

- A.  $H_2O$
- B.  $CO_2$
- C. K
- D. P
- E. N

73. Pharynx leads air into \_\_\_\_\_ through glottis.

- A. Trachea
- B. bronchus
- C. alveoli
- D. nasal sac
- E. larynx

74. The concentration of Na ions in the body fluids is controlled by \_\_\_\_\_ hormone.

- A. ADH
- B. parathormone
- C. aldosterone
- D. estrogen
- E. thyroxin

75. The movement of plants in response to touch stimulus is called:

- A. hydrotropism
- B. chemotropism
- C. geotropism
- D. thigmotropism
- E. phototropism



Educational  
Testing Service

76. The number of muscles in a human body is about:

- A. 200
- B. 300
- C. 400
- D. 500
- E. 600

77. Steroids consist of 6-membered carbon rings and one 5 membered carbon ring.

- A. Four
- B. Three
- C. Two
- D. Five
- E. Six

78. An enzyme increases the speed of a reaction:

- A. by adding activation energy requirements
- B. by lowering activation energy requirements
- C. by decreasing the concentration of products
- D. by increasing the concentration of products
- E. all of the above

79. Lysosomes are also called:

- A. Suicide sacs
- B. Chondriosome
- C. Storage organelle
- D. Dictyosome
- E. Power house of a cell



**80. Closely related species are grouped together into \_\_\_\_\_.**

- A. families
- B. orders
- C. phyla
- D. kingdom
- E. genera

**81. The cell wall of most of the bacteria have unique macromolecule called \_\_\_\_\_.**

- A. cellulose
- B. chitin
- C. fibres
- D. fats
- E. peptidoglycan

**82. All of the following organisms belong to the kingdom protista EXCEPT:**

- A. Ulva
- B. Euglena
- C. Suctorina
- D. Slime mold
- E. Common Molds



**83. Parasitic fungi absorb nutrients directly from the living host with the help of special hyphal tips called \_\_\_\_\_.**

- A. Roots
- B. Root hair
- C. Rhizoids
- D. Haustoria
- E. None of the above

**84. The botanical name of Imli is:**

- A. Cassia fistula
- B. Mimosa pudica
- C. Tamarindus indica
- D. Datura alba
- E. Rosa indica

85. Which one is not the group of Gymnosperm ?

- A. Cycads
- B. Ginkgo
- C. Gnetae
- D. Conifers
- E. Musci

86. Which one of the following is fish?

- A. Star fish
- B. Jelly fish
- C. Cuttle fish
- D. Sea horse
- E. None of the above

87. Glucose  $\rightarrow$  2pyruvic acid + 2H<sub>2</sub>O

2NAD + 2Pi  $\rightarrow$  2ATP

2NAD + 4H  $\rightarrow$  2NADH + 2H<sup>+</sup>



These three reactions collectively constitute \_\_\_\_\_.

- A. Kreb's cycle
- B. Calvin's cycle
- C. Electron transport chain
- D. Light reaction
- E. Glycolysis

88. The genotype of normal male in humans is \_\_\_\_\_ chromosomes,

- A. 44+XX
- B. 44+XY
- C. 44+XXY
- D. 44+X0
- E. 44+XXX

89. The process of replacing or supplementing the defective allele with a functional, normal allele is known as \_\_\_\_\_.

- A. allele transplant
- B. physiotherapy
- C. Gene therapy
- D. mutation
- E. cloning

90. Germ cells give rise to:

- A. legs
- B. head
- C. eggs and sperms
- D. hands
- E. all body parts

91. Cells from a bacterial clone were grown for many generations on a medium in which all the nitrogen compounds contained only the isotope nitrogen 15 ( $^{15}\text{N}$ ). Adenine comprised 36% of the nitrogen bases present. A sample of these bacteria was transferred to a medium in which the only nitrogen source was  $^{14}\text{N}$  and was provided with conditions suitable for asexual reproduction. What was the percentage of guanine in the DNA?

- A. 14%
- B. 18%
- C. 28%
- D. 36%
- E. 64%



92. Nitrogen-cycle is facilitated by \_\_\_\_\_.

- A. Algae
- B. Fungi
- C. Bacteria
- D. Virus
- E. Earth-quacks

93. Savannah is an example of \_\_\_\_\_ ecosystem.

- A. marine water
- B. fresh water
- C. forest
- D. tropical grass land
- E. desert

94. In cats, the genes controlling coat-colour are co-dominant (incompletely dominant) and are carried on the X chromosomes. When a black female was mated with a ginger male the resulting litter consisted of black male and tortoise-shell female kittens. What phenotypic ratio would be expected in the F<sub>2</sub> generation

- A. 1 black male: 1 ginger male: 2 tortoise-shell females
- B. 1 black male: 1 ginger male: 1 tortoise-shell female 1 black female
- C. 2 black males: 1 tortoise-shell female: 1 ginger female black female
- D. 1 black male : 1 tortoise-shell female : 1 ginger female : 1 black female
- E. 2 black males : 1 tortoise-shell female : 1 black female

95. The region where the impulse moves from one neuron to another \_\_\_\_\_ is called

- A. Axon
- B. Dendrites
- C. Synapse.
- D. Thalamus
- E. Cerebellum



96. A bean seed contains all of the following except :

- A. A seed coat
- B. An epicotyl
- C. A hypocotyl
- D. A hypha
- E. Cotyledon

97. \_\_\_\_\_ is the reconstruction of the lost part of the body,

- A. Growth
- B. Development
- C. Regeneration
- D. Blastulation
- E. Gastrulation

98. Fern has \_\_\_\_\_ pair of chromosome.

- A. 20
- B. 40
- C. 500
- D. 13
- E. 7

**99. Which valve action results from an increase in pressure in the ventricles of the heart?**

- A. The closing of all the heart valves
- B. The closing of semi-lunar valves
- C. The opening of the bicuspid valve
- D. The opening of the semi-lunar valves
- E. The opening of the tricuspid valve

**100. The combination of XXY (47) chromosomes results in:**

- A. Down's Syndrome
- B. Turner's Syndrome
- C. Klinefelter's Syndrome
- D. Sickle cell anemia
- E. Color blindness



# National Testing Service Past Papers

## NTS TESTING SERVICE NTS ANSWER KEY 2012



Question#	Correct Choice	Question#	Correct Choice	Question#	Correct Choice	Question#	Correct Choice
1	E	26	C	51	D	76	E
2	B	27	B	52	B	77	B
3	C	28	A	53	E	78	B
4	B	29	E	54	B	79	A
5	D	30	C	55	C	80	E
6	B	31	A	56	E	81	E
7	B	32	A	57	D	82	E
8	D	33	C	58	B	83	D
9	A	34	E	59	B	84	C
10	B	35	E	60	C	85	E
11	E	36	C	61	B	86	D
12	C	37	B	62	A	87	E
13	D	38	C	63	E	88	B
14	D	39	C	64	E	89	C
15	A	40	A	65	D	90	C
16	E	41	D	66	C	91	A
17	A	42	C	67	C	92	C
18	B	43	C	68	B	93	D
19	C	44	B	69	C	94	B
20	D	45	E	70	D	95	C
21	C	46	B	71	E	96	D
22	D	47	C	72	D	97	C
23	C	48	D	73	E	98	C
24	C	49	C	74	C	99	D
25	C	50	C	75	D	100	C



# Past Paper 2013

# NATIONAL TESTING SERVICE



# NTS past paper 2013

## ENGLISH

Complete the sentences by choosing the most appropriate notion, from the given lettered choices (A to E) below each.

1. I \_\_\_\_\_ have to get up early tomorrow morning.

- A. shall
- B. would
- C. had
- D. could
- E. am



2. He says he is a \_\_\_\_\_ but he can't play the piano or any other instrument and he can't sing.

- A. musician
- B. magician
- C. physician
- D. dietician
- E. technician

Identify the word or phrase that needs to be changed for the sentence to be correct:

3. The secretary must type these letters before lunch. No error  
A B C D E

4. I go by the post office every morning on my way too work. No error  
A B C D E

**Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters.**

**5. GRIEVE:**

- A. disturb
- B. hurt
- C. dirge
- D. feel sad
- E. rejoice

**6. BLAZE:**

- A. quench
- B. burn
- C. rage
- D. shine
- E. flame

**Choose the word most similar in meaning to the capitalized ones.**

**7. GENTLE:**

- A. rough
- B. expert
- C. heartless
- D. calm
- E. wicked

**8. SQUASH:**

- A. squeeze
- B. beat
- C. evolution
- D. pace
- E. rapidity



**Questions 9-10 are based on the following passage.**

However, it must be recognized that science has its limitations. Its methods apply only to those things which can be observed, measured, and treated mathematically. It has nothing to do with values - save those of truth and accuracy. It has nothing to do with happiness, goodness, beauty, courage, adventure, justice, altruism, friendship, love of family, love of country. Yet all these values enter into a man's conception of what is the good personal life within a good society. It is possible for honest and intelligent men to differ profoundly on the nature of these values and their respective degrees of importance. Hence the contrast between the modern world's command of material things and its tragic failure to organize a harmonious world society.

**9. It can be inferred from the passage that the author thinks :**

- A. science to be the necessary element on life
- B. science brings happiness, goodness, beauty, adventure, justice, altruism, friendship, love and love of country to a man's life
- C. science has successfully brought a balance between world's command of material things and a harmonious world society
- D. a good personal life can be achieved by recognizing nature of values and their degree of importance
- E. the limitations of science are negligible .

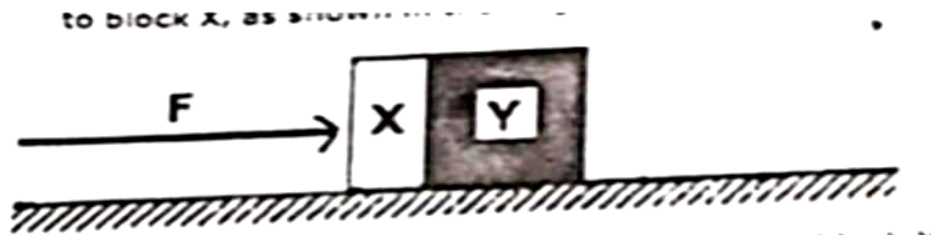
**10. According to the paragraph science applies certain values, which of the following describes these values?**

- A. truth and justice
- B. love of country and accuracy
- C. truth and accuracy
- D. justice and accuracy
- E. truth and love of country



**PHYSICS**

11. Two blocks, X and Y, of masses  $m$  and  $2m$  respectively, are accelerated along a smooth horizontal surface by a force  $F$  applied to block X, as shown in the diagram.



What is the magnitude of the force exerted by block Y on block X during this acceleration?

- A. 0
- B.  $F/3$
- C.  $F/2$
- D.  $2F/3$
- E.  $F$



12. A box of mass  $m = 6 \text{ kg}$  slides with speed  $v = 4 \text{ m/s}$  across a frictionless floor. It suddenly explodes into two pieces. One piece, with mass  $m_1 = 2 \text{ kg}$  moves in the same direction with speed  $V_1 = 8 \text{ m/s}$ . Find the velocity of the second piece.

- A.  $2 \text{ m/s}$
- B.  $4 \text{ m/s}$
- C.  $8 \text{ m/s}$
- D.  $9 \text{ m/s}$
- E.  $11 \text{ m/s}$

13. A generator of e.m.f.  $80 \text{ V}$  has an internal resistance of  $0.04 \Omega$ . If its terminal voltage is  $75 \text{ V}$ , determine the current.

- A.  $125 \text{ A}$
- B.  $135 \text{ A}$
- C.  $145 \text{ A}$
- D.  $155 \text{ A}$
- E.  $165 \text{ A}$

14. A 4 cm high object is located 10 cm from the converging lens, whose focal length is 20 cm. The image so formed will be:

- A. Virtual
- B. Erect
- C. Real
- D. Inverted
- E. Both A and B

15. A rotating wheel of radius 0.5 m has an angular velocity of 5 rad/s at some instant and 10 rad/s after 5s find the angular acceleration of a point on its rim.

- A. 1 rad/S<sup>2</sup>
- B. 3 rad/S<sup>2</sup>
- C. 5 rad/S<sup>2</sup>
- D. 7 rad/S<sup>2</sup>
- E. 9 rad/S<sup>2</sup>

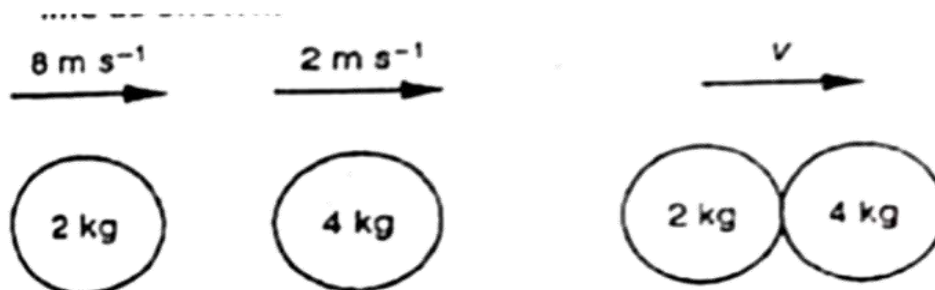
16. A block of mass 50 kg is pulled on a frictionless floor by a force of 210 N directed at 30° to the horizontal. If the block moves 3.0 m, what is the work done on it by the applied force.

- A. 115 J
- B. 215 J
- C. 315 J
- D. 415 J
- E. 515 J



Educational  
Testing Service

17. A ball of mass 2 kg traveling at 8 ms<sup>-1</sup> strikes a ball of mass 4 kg traveling at 2 ms<sup>-1</sup>. Both balls are moving along the same straight line as shown.



After collision, both balls move at the same velocity  $v$ . What is the magnitude of the velocity  $v$ ?

- A.  $4\text{ms}^{-1}$
- B.  $5\text{ms}^{-1}$
- C.  $6\text{ms}^{-1}$
- D.  $8\text{ms}^{-1}$
- E.  $10\text{ms}^{-1}$

18. A shot leaves a gun at the rate of  $160\text{ m/s}$ . Calculate the greatest distance to which it could be projected. (Take  $g = 10\text{ m/s}^2$ ).

- A.  $2460\text{ m}$
- B.  $2560\text{ m}$
- C.  $2680\text{ m}$
- D.  $2760\text{ m}$
- E.  $2860\text{ m}$

19. On the ground, the gravitational force on a satellite is  $W$ . What is the gravitational force on the satellite when at a height  $R/50$ , where  $R$  is the radius of the Earth?

- A.  $1.04\text{ W}$
- B.  $1.02\text{ W}$
- C.  $0.98\text{ N}$
- D.  $0.96\text{ W}$
- E.  $2.13\text{ W}$



20. When the aircraft Concorde is moving in a horizontal plane at a constant speed of  $650\text{ ms}^{-1}$ , its turning circle has a radius of  $80\text{ km}$ . What is the ratio of the centripetal force to the weight of the aircraft? ( $g = 9.8\text{ m/s}^2$ )

- A.  $8.3 \times 10^4$
- B.  $0.54$
- C.  $1.9$
- D.  $52$
- E.  $540$

21. The amount of heat at constant volume is called as:

- A. Internal energy
- B. Enthalpy
- C. Entropy
- D. Temperature
- E. Pressure



22. A parallel beam of white light is incident normally on a diffraction grating. It is noted that the second-order and third-order spectra partially overlap. Which wavelength in the third-order spectrum appears at the same angle as the wavelength of 600 nm in the second-order spectrum?

- A. 300 nm
- B. 400 nm
- C. 600 nm
- D. 900 nm
- E. 950 nm

23. If the frequency of a pendulum is four times greater on an unknown planet than it is on earth then the gravitational constant on that planet is;

- A. 16 times greater
- B. 4 times greater
- C. 4 times lower
- D. 16 times lower
- E. 24 times lower



24. A submarine sends out a sonar signal (sound wave) in a direction directly downward. It takes 2.3 s for the sound wave to from the submarine to the ocean bottom and back to the submarine. How high (approx) up from the ocean to submarine? (The speed of sound in water is 1,490 m/s.)

- A. 1,700 m
- B. 3,000 m
- C. 5,000 m
- D. 9,000 m
- E. It cannot be determined from the information given

25. A 40 kg block is resting at a height of 5 m off the ground. If the block is released and falls to the ground, what is its total energy at a height of 2 m? ( $g = 10 \text{ m/s}^2$ )

- A. 0J
- B. 400J
- C. 2 kJ
- D. 6 kJ
- E. It cannot be determined from the information given



26. Gamma ( $\gamma$ ) ray can produce ionization in which of the following way/s?

- I. It may lose all its energy in a single encounter with electron of an atom (Photoelectric effect).
  - II. It may lose only a part of its energy in an encounter (Compton effect).
  - III. Very few of very high energy  $\gamma$  ray photons may impinge directly on heavy nuclei, be stopped and annihilated giving rise to electron-positron pairs (The materialization of energy).
- A. I only
  - B. II only
  - C. III only
  - D. I and III only
  - E. I, II and III

27. The Internal energy of an object increase in an adiabatic process Which of the following must be the true regarding this process.

- A. The kinetic energy of the system is changing
- B. The potential energy of the system is changing
- C. Work Is done on the system
- D. Heat flows into the system
- E. No work is done on the system



28. An electric rod of 2000 watts rating boils a certain quantity of water in 10 minutes, the heat which is generated for boiling this water is:

- A.  $8 \times 10^4$  Joules
- B.  $12 \times 10^5$  Joules
- C.  $19 \times 10^5$  joules
- D.  $23 \times 10^5$  Joules
- E.  $37 \times 10^5$  Joules

29. A nucleus consists of 19 protons and 20 neutrons. The conventional symbol of this nucleus is:

- A.  $_{11}\text{Na}^{12}$
- B.  $_{19}\text{k}^{19}$
- C.  $_{19}\text{K}^{39}$
- D.  $_{10}\text{K}^{20}$
- E.  $_{11}\text{Na}^{12}$

30. The linear magnification produced by a lens is defined as the ratio of the:

- I. Size of the image to the size of object
- II. Size of the lens to the size of object
- III. Size of the lens to the size of the Image

- A. I only
- B. II only
- C. III only
- D. II and III only
- E. I, II and III



31. The half life of  $c^{14}$  is approximately 5,730 years, while the half life of  $C^{12}$  is essentially infinite. If the ratio of  $C^{14}$  to  $C^{12}$  in a certain sample is 25% less than the normal ratio in nature, how old is the sample?

- A. Less than 5, 730 years
- B. Approximately 5, 730 years
- C. Significantly greater than 5, 730 years, but less than 11, 460 years
- D. Approximately 11, 460 years
- E. Approximately 15, 730 years

32. Which of the following statements is not consistent with Bohr's set of postulates regarding the hydrogen atom model with regard to the emission and absorption of light?

- A. Energy levels of the electrons are stable and discrete.
- B. An electron emits or absorbs radiation only when making a transition from one energy level to another.
- C. To jump from a lower energy to a higher energy, an electron must absorb a photon of precisely the right frequency such that the photon's energy equals the energy difference between the two orbits.
- D. To jump from a higher energy to a lower energy, an electron' absorbs a photon of a frequency such that photon's energy is exactly the energy difference between the two orbits.
- E. None of the above

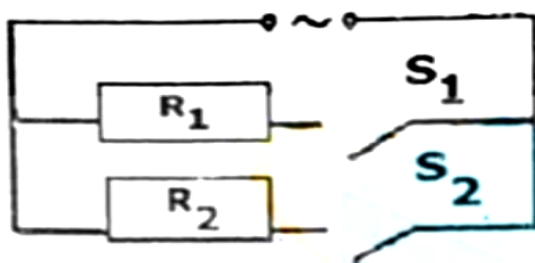
33. The temperature of a body at  $100^{\circ}\text{C}$  is increased by  $\Delta\theta$  as measured on the Celsius scale. How is this temperature change expressed on the Kelvin scale?

- A  $\Delta\theta + 373$
- B.  $\Delta\theta + 273$
- c.  $\Delta\theta + 100$
- D.  $\Delta\theta$
- E.  $\Delta\theta + 212$

34. In an astronomical telescope, the distance between objective and eye piece is called:

- A. Magnifying Power of the telescope
- B. Width of the telescope
- C. Length of the telescope
- D. Height of the telescope
- E. Diameter of the lens of the telescope

35. An electric heater can be represented as two resistors of resistances  $R_1$  and  $R_2$  and two switches  $S_1$ , and  $S_2$ . The resistance  $R_2$  is greater than that of  $R_1$ .



Which switches must be closed so that the heater produces the maximum possible power and minimum non-zero power?

	MAXIMUM POSSIBLE POWER	MINIMUM NON-ZERO POWER
A	$S_1$ and $S_2$	$S_2$
B	$S_1$ and $S_2$	$S_1$
C	$S_1$	$S_2$
D	$S_2$	$S_1$
E	$S_1$	$S_1$

36. Candela is the luminous intensity, in the perpendicular direction of a surface \_\_\_\_\_ square meter of a black body at the temperature of freezing platinum under a pressure of 101325 newton per square meter.

- A.  $1/300000$
- B.  $1/600000$
- C.  $1/900000$
- D.  $1/1200000$
- E.  $1/1500000$

37. The work done in moving an object along a straight line from (3, 2, -1) to (2, -1, 4) in a force field which is given by

$$\mathbf{F} = 4\mathbf{i} - 3\mathbf{j} + 2\mathbf{k}, \text{ is:}$$

- A. 45
- B. 35
- C. 25
- D. 15
- E. 5

38. A constant force acting on a body of mass 5 kg changes its speed from 2 m/s to 7 m/s in 10 s, the direction of motion of the body remains unchanged. Find the magnitude of the force, (Take  $g = 10 \text{ m/s}^2$ )

- A. 0.5 N
- B. 1.5 N
- C. 2.5 N
- D. 3.5 N
- E. 4.5 N



39. What force should be applied on a 10 kg body so that it moves down in vacuum with an acceleration of  $3 \text{ m/s}^2$ ? (Take  $g = 9.8 \text{ m/s}^2$ )

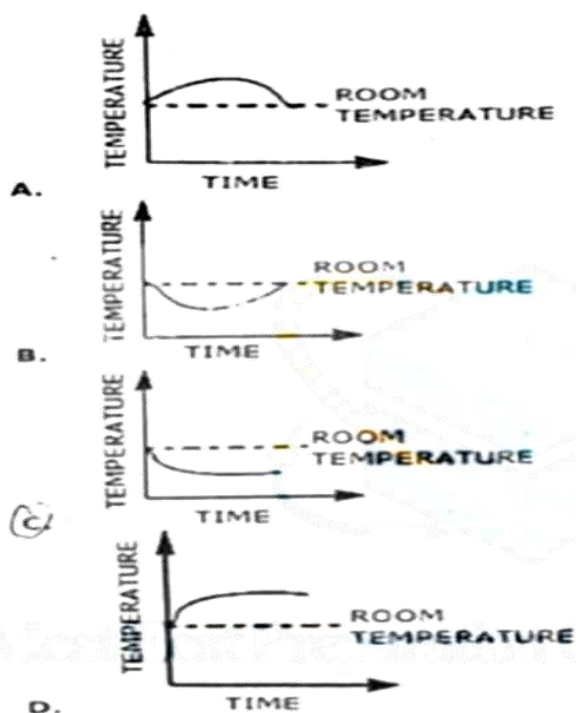
- A. 42 N
- B. 46 N
- C. 48 N
- D. 53 N
- E. 58 N

40. A special class of waves which do not need a material medium for their propagation are called:

- A. Electric waves
- B. Magnetic waves
- C. Electromagnetic waves
- D. Sound waves
- E. Earthquake's shock waves

**CHEMISTRY**

41. Dissolution of ammonium nitrate in water is an endothermic process. Which of the following graph shows how the temperature alters as the ammonium nitrate is added to water and then the solution is left at room temperature?



**ETS**  
Educational  
Testing Service

42. From a mixture of  $\text{CO}_2$  and  $\text{H}_2$  gases,  $\text{CO}_2$  can be separated by passing the mixture through:

- A. water at high temperature
- B. water under high pressure
- C. cold water
- D. acidified water



43. Alkanes having five to seventeen carbon atoms per molecule are:

- A. liquids
- B. solids
- C. gases
- D. semi solid wax

44. Which type of Isomerism depends on distribution of carbon atoms on each side of functional group?

- A. Structural Isomerism
- B. Functional Isomerism
- C. Chain Isomerism
- D. Metamerism

45. Non-stoichiometric compounds are formed by:

- A. only alkali metals
- B. only transition elements
- C. only noble gases
- D. none of the above

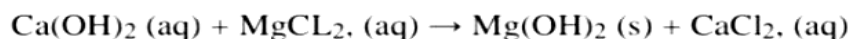


46. Which statement is correct about Nobel gases?

- A. Their oxidation state is zero
- B. They react easily with alkali metals
- C. They exist in form of molecules
- D. They are also known as halogens
- E. None of the above

47. Magnesium oxide is used in the making of the lining of blast furnaces. It is extracted from sea water as follows.

Aqueous calcium hydroxide is added to seawater.

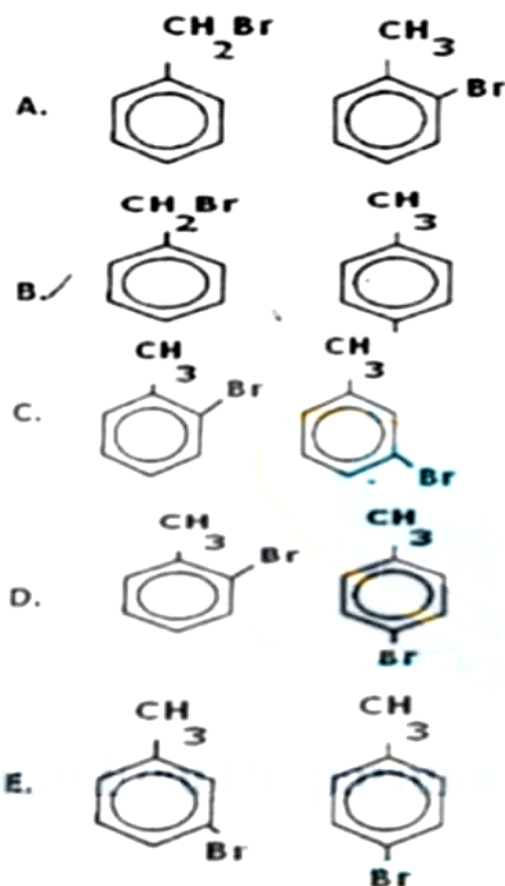


The magnesium hydroxide is then filtered off and roasted.

Which of the following comparisons between calcium and magnesium explains why magnesium hydroxide forms?

- A. Magnesium is less electropositive than calcium.
- B. Magnesium is lower than calcium in the reactivity series.
- C. The enthalpy change of hydration for  $\text{Mg}^{2+}$  is less exothermic than for  $\text{Ca}^{2+}$ .
- D. The solubility product for  $\text{Mg(OH)}_2$  is lower than that for  $\text{Ca(OH)}_2$
- E. The magnitude of the lattice energy of  $\text{Mg(OH)}_2$  is less than that of  $\text{Ca(OH)}_2$ .

48. When methylbenzene is treated with bromine in the presence of a catalyst, a mixture of two monobromo isomers is formed. What are the structures of these two isomers?

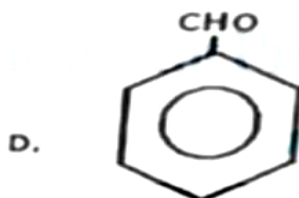
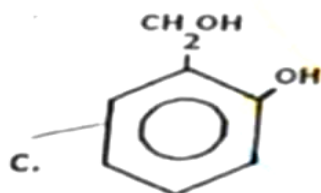
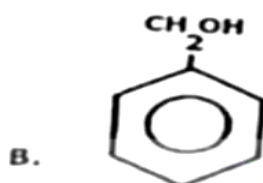
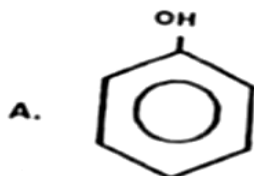


49. The series limit for the Balmer series of hydrogen spectrum occurs at 3664Å. Calculate Ionization energy of hydrogen atom.

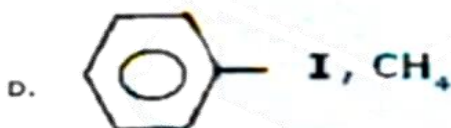
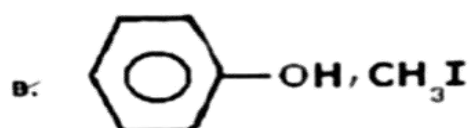
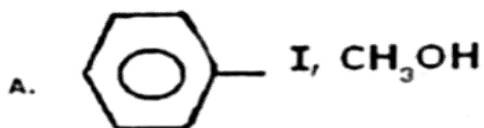
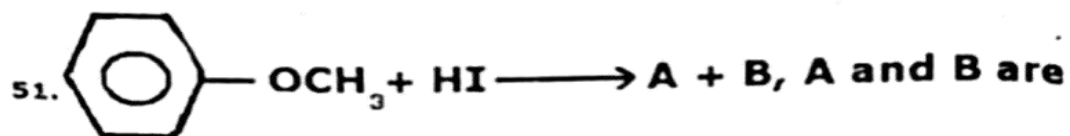
- A.  $21.7 \times 10^{-19} \text{ J}$
- B.  $6.626 \times 10^{-34} \text{ J}$
- C.  $5.425 \times 10^{-19} \text{ J}$
- D.  $3664 \times 10^{-10} \text{ J}$
- E.  $3 \times 10^8 \text{ J}$



50. Which one of the following formulae represents the organic in compound formed when methylbenzene is heated under reflux with alkaline manganate (VII) solution and the mixture then acidified ?



51.



Educational  
Testing Service

52. The false statement about lithium is:

- A. It is softer than other alkali metals
- B. It is least reactive
- C. It possesses higher melting and boiling points
- D. It forms chloride which is soluble in alcohol

53. Diamond and Graphite:

- A. are isotopes
- B. are Isomers
- C. are allotropes
- D. have the same structure
- E. are equally hard

54. Borax exists in nature as:

- A.  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$
- B.  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 7\text{H}_2\text{O}$
- C.  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 5\text{H}_2\text{O}$
- D.  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 3\text{H}_2\text{O}$
- E.  $\text{Na}_2\text{B}_4\text{O}_7 \cdot \text{H}_2\text{O}$

55. Outer transition elements belong to:

- A. s-block
- B. p-block
- C. d-block
- D. f-block
- E. None of the above



56. Transition elements have coloured compounds because:

- A. Their bond energy is low
- B. they easily absorb energy
- C. splitting of the five degenerated d-orbitals take place
- D. d-orbitals are very close to p-orbitals
- E. degenerate p-orbitals are present

57. In a double-bonded carbon atom ( $\text{C}=\text{C}$ ):

- A. hybridization occurs between the s-orbital and one p orbital
- B. hybridization occurs between the s-orbital and two p-orbitals
- C. hybridization occurs between the s-orbital and three p-orbitals
- D. no hybridization occurs between the s-and p-orbitals
- E. hybridization occurs between two s-orbitals and one p orbital

58. The radii of the second orbit of the hydrogen atom calculated from Bohr's model is:

- A.  $0.529 \text{ \AA}$
- B.  $4.8 \text{ \AA}$
- C.  $2.41 \text{ \AA}$
- D.  $3.4 \text{ \AA}$
- E.  $1 \text{ \AA}$

59. The amount of energy released by absorbing an electron in the valence shell is:

- A. Ionisation Energy
- B. Electron Affinity
- C. Electronegativity
- D. Atomic Radius
- E. Atomisation Energy

60. Rate =  $k[N_2O_5]$  has \_\_\_\_\_ of reaction.

- A. First order
- B. Pseudo first order
- C. Second order
- D. Third order
- E. Pseudo order

61. Which one of the following molecules has shortest distance of \_\_\_\_\_ carbon atoms?

- A.  $CH_3 - CH_3$
- B.  $CH_2 = CH_2$
- C.  $CH = CH$
- D.  $CH_3 - CH_2 - CH_3$
- E.  $CH_2 = CH_2 - CH_3$



62. The most dense element is:

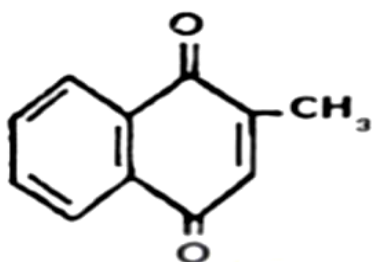
- A. Li
- B. K
- C. ca
- D. Ba
- E. Rb

63. The isomers must have the same:

- A. Physical properties
- B. Molecular Formula
- C. Structural Formula
- D. Chemical properties
- E. Both B and C

64. For a reaction  $2A + B \rightleftharpoons C + D$  the active mass of B is kept constant and that of A is tripled. It is observed that the rate of reaction.

- A. decreases three times
- B. decreases nine times
- C. increases six times
- D. increases nine times



65.



is a structure of :

- A. Menadione
- B.  $\alpha$  - Tocopherol
- C. Calciferol
- D. Thiamine
- E. Pyridoxine

66. In the final answer of the expression:  $-(29 - 20.2)(1.79 \times 10^5) / 1.37$  the number of significant figures is:

- A. 1
- B. 2
- C. 3
- D. 4

67. If we take 2.2 grams of  $\text{CO}_2$ ,  $6.02 \times 10^{21}$  atoms of nitrogen and 0.03 gram atoms of sulphur, then the molar ratio of C, N and O atoms will be:

- A. 1:2:5
- B. 5:1:2
- C. 2:5:3
- D. 5:1:3

68. A system at equilibrium can be disturbed by:

- A. Concentration change
- B. Pressure change
- C. Temperature
- D. All of the above

69. Among the following electrons, which has highest energy?

- A.  $n = 3, l = 2, m = 0, S = +1/2$
- B.  $n = 4, l = 0, m = 0, S = -1/2$
- C.  $n = 3, l = 1, m = 1, S = -1/2$
- D.  $n = 3, l = 0, m = 0, s = -1/2$



Educational  
Testing Service

70. Equal weights of methane and hydrogen are mixed in an empty container at  $25^{\circ}\text{C}$ . The fraction of total pressure exerted by hydrogen is:

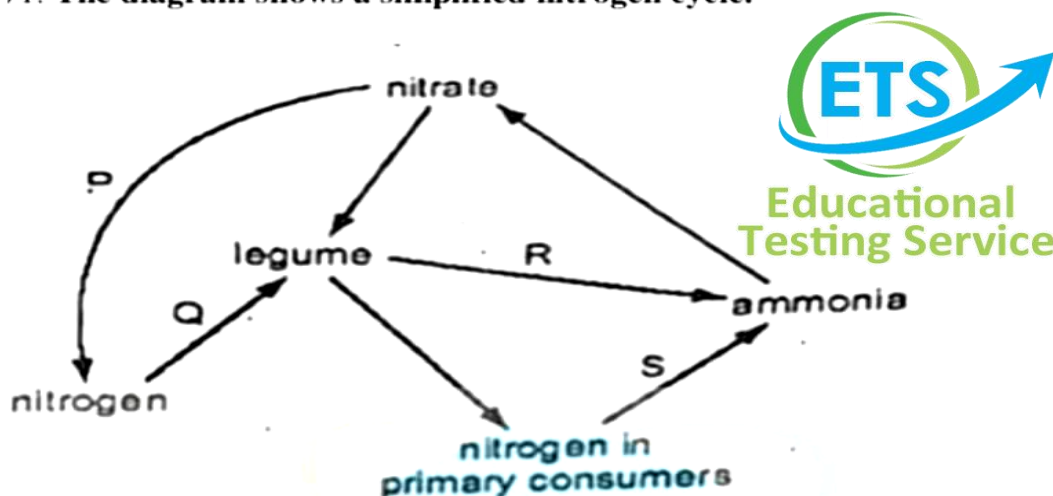
- A.  $1/2$
- B.  $8/9$
- C.  $1/9$
- D.  $16/17$

Ncert/Eamt Preparation Online Testing System

We Serve Quality Education

**BIOLOGY**

71. The diagram shows a simplified nitrogen cycle.



Which row shows the correct labels for P, Q, R and S?

	P	Q	R	S
A	Denitrification by anaerobic bacteria	Nitrogen fixation nitrifying bacteria	Decay of leaf tissue by saprotrophic fungi	Ammonification by saprotrophic fungi
B	Lightening action on soil nitrates	Nitrogen fixation by nitrogen fixing bacteria	Decomposition using nitrogen enzyme	Decomposition by root nodule bacteria
C	Nitrification by anaerobic bacteria	Nitrification using nitrogenase enzyme	Decay of leaf tissue by saprotrophic fungi	Assimilation of organic nitrogen
D	Reduction by anaerobic bacteria	Nitrogen fixation by root nodule bacteria	Decomposition of organic nitrogen	Decay of urea by saprotrophic bacteria

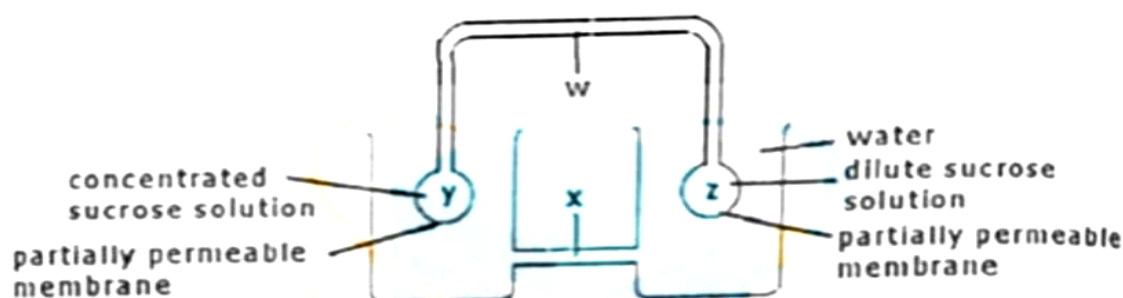


72. In the commercial manufacture of Insulin, a human gene is inserted into which of these?

- A. a chromosome of a human cell
- B. a protein molecule in a yeast cell
- C. the DNA of a bacterium
- D. the nucleic acid in a virus



73. The diagram shows a model to demonstrate the mass flow hypothesis of translocation.



In a plant, what are the structures W, X, Y and Z and what is the direction of flow of solution along W?

	Phloem	Xylem	Roots	Leaves	Direction to from among w
A	W	X	Y	Z	From z to y
B	W	X	Z	Y	From y to z
C	W	W	Y	Z	From y to z
D	w	w	Z	Y	From z to y

74. Many scientists believe that one of the following is/are evolutionary origin(s) of animals, plants and fungi?

- A. Protists
- B. Algae
- C. Bacteria
- D. Protozoans

75. In the human body, blood circulating from the gut to the heart passes through the:

- A. aorta
- B. kidneys
- C. liver
- D. lungs
- E. spleen



76. The diagram shows the four types of human tooth.

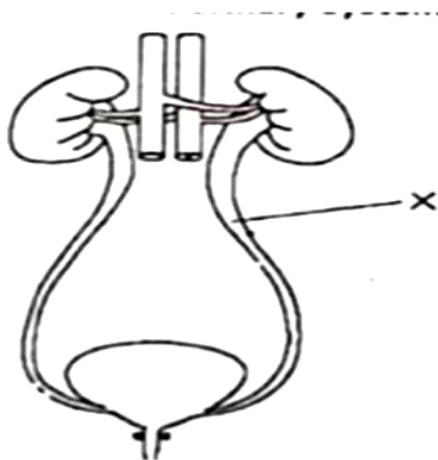


- A. 1 and 2
- B. 2 and 3
- C. 3 and 4
- D. 4 and 1

77. What are the functions of the inter, motor and sensory neurons in a reflex response?

	INTER NEURON	MOTOR NEURON	SENSORY NEURON
A	to connect neurons within the central nervous system	to conduct impulses to the effector from the central nervous system	To conduct impulses from the receptor to the central nervous system
B	To conduct impulses to the effector	To connect neurons within the central nervous system	To receive the stimulus
C	To conduct impulses from the central nervous system to the effector	To conduct impulses from the receptor to the central nervous system	To connect neurons within the central nervous system
D	To conduct impulses from the receptor to the central nervous system	To conduct impulses from the receptor to the central nervous system	To conduct impulses to the effector

78. The diagram shows the human urinary system.



Which substance is not found in the liquid at x In a healthy person?

- A. glucose
- B. Salt
- C. toxins
- D. water

79 .Male and female sea urchina release their sperm and eggs Into the water where fertilization takes place. How can their reproduction be described?

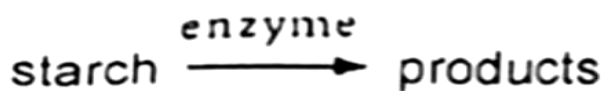
- A. asexual reproduction which results in genetically dissimllar offspring
- B. asexual reproduction which results in genetically identical offspring
- C. sexual reproduction which results in genetically dissimllar offspring
- D. sexual reproduction which results in genetically identical offspring

80.Which vertebrate groups have scaly skin?

- A. amphlblans and fish
- B. amphlblans and mammals
- C. fish and mammals
- D. fish and reptiles



81. The following reaction occurs in the human alimentary canal. enzyme starch



What is the enzyme and the product?

ENZYME

PRODUCT

- A. acid
- B. alkali
- C. amylase
- D. bile

- glucose
- energy
- maltose
- amino acid



82. Archaeopteryx is a transitional stage between the members of which one of the following pairs?

- A. amphibian ... bird
- B. fish ... amphibian
- C. reptile ... mammal
- D. reptile ... bird
- E. mammal ... man

83. In the Krebs cycle, substrate-level phosphorylation accompanies the formation of:

- A. Citrate
- B. Alpha-ketoglutarate
- C. Succinate
- D. Fumarate
- E. Oxaloacetate

84. When a physician elicits the knee-jerk reflex by tapping deep tendons in the knee, the normal response is for the lower leg to swing forward. When this happens:

- A. Muscles in the front of the thigh are contracting and muscles in the back of the thigh are relaxing
- B. Muscles in the front of the lower leg are contracting and muscles in the back of the lower leg are relaxing
- C. Muscles in the back of the thigh are contracting and muscles in the front of the thigh are relaxing
- D. Muscles in the back of the lower leg are contracting and muscles in the front of the lower leg are relaxing
- E. None of the above

85. Of the following, which is the incorrectly paired one?

- A. Robert Hooke ... cell wall
- B. Schleiden and Schwann ... cell theory
- C. Robert Brown ... nucleus
- D. Watson and Crick ... DNA model
- E. Virchow ... mosaic model of plasma membrane

86. Identify the phylum in which the larva is bilaterally symmetrical but the adult is radially symmetrical:

- A. Ctenophora
- B. Coelenterata
- C. Echinodermata
- D. Sipunculoidea



87. The botanical name of gum tree is:

- A. *Acacia nilotica*
- B. *Mimosa pudica*
- C. *Acacia catechu*
- D. *Prosopis glandulosa*
- E. *Albizia Lebbek*

88. A pure-breeding plant with the dominant phenotype of character P and the recessive phenotype of character Q was crossed with another pure-breeding plant with the recessive phenotype of character P and the dominant phenotype of Q. The offspring of this cross were crossed with a double homozygous recessive for P and Q and the following results obtained: 22 were phenotypically dominant for P and recessive for Q, 5 were phenotypically dominant for both P and Q, 4 were phenotypically recessive for both P and Q, 24 were phenotypically recessive for P and dominant for Q. Which one of the following types of inheritance is illustrated by these results?

- A. gene linkage of P and Q
- B. independent segregation of P and Q
- C. Mendelian dihybrid inheritance
- D. multiple alleles
- E. polygenic inheritance

89. How many metacarpals are present in the hand?

- A. 4
- B. 3
- C. 6
- D. 5
- E. 8

90. which of the following is NOT a difference that would allow one to distinguish between a prokaryotic and a eukaryotic cell?

- I. Presence or absence of the nucleus
  - II. Presence or absence of the cell wall
  - III. Membrane-bound versus no membrane-bound organelles
- A. I only
  - B. II only
  - C. III only
  - D. I and II only
  - E. I, II and III

91. Some enzymes require the presence of a nonprotein molecule to behave catalytically. An enzyme devoid of this molecule is called a(n)

- A. holoenzyme
- B. apoenzyme
- C. coenzyme
- D. zymoenzyme



92. The events shown below occur during different phases of mitosis:

- I. spiralization of DNA
- II. hydration of DNA
- III. centromeres split
- IV. centromeres attach to spindle fibres
- V. DNA replicates

Which one of the following correctly identifies each of the phases described

	Interphase	prophase	metaphase	anaphase	telophase
A	I	II	III	IV	V
B	I	V	IV	II	III
C	V	I	IV	III	II
D	II	IV	I	III	V
E	V	IV	I	II	III

93. When a fetus is in the uterus, what carries oxygen away from the placenta?

- A. The amniotic fluid
- B. The amniotic sac
- C. The lining of the uterus
- D. The umbilical cord



94. The floral formula of family mimosaceae Is:

- A.  $\oplus, \text{♀}, K_{(5)}, \overline{C_{(5)}}, A_5, \underline{G_{(2)}}$
- B.  $+, \text{♀}, K_{(5)}, C_{1+2+(2)}, A_{(9)+1}, \underline{G_1}$
- C.  $+, \text{♀}, K_{(5) \text{ or } 5}, C_5, A_{10}, \underline{G_1}$
- D.  $\oplus, \text{♀}, K_{(5)}, C_{5 \text{ or } (5)}, A_{\alpha \text{ or } (10)}, \underline{G}$
- E. None of the above

95. Which type of protein structure contains the three dimensional structure?

- A. primary  
B. secondary  
C. tertiary  
D. quaternary



96. Which of the following describes the movements involved in breathing out?

**movements of ribs**

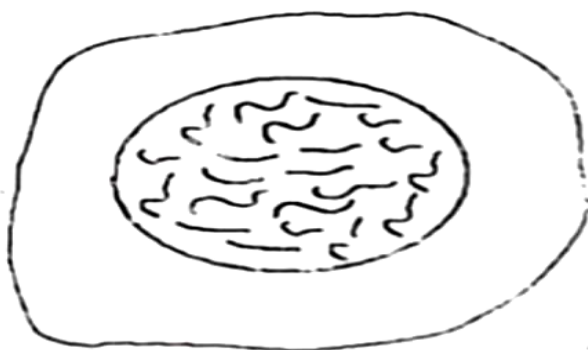
- A. down and In  
B. down and In  
C. up and out  
D. up and out

**movements of diaphragm**

- downwards  
upwards  
downwards  
Upwards



97. The diagram shows a cell of an organism formed by reduction division.

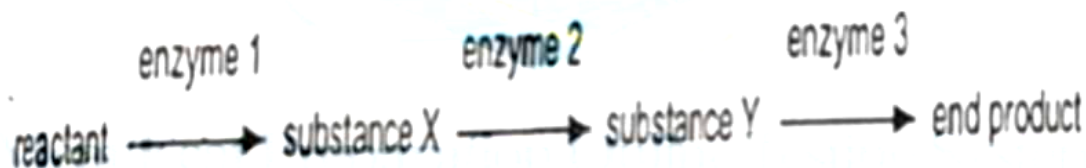


What is the diploid number for this organism?

- A. 10
- B. 20
- C. 30
- D. 40
- E. 44



98. The diagram shows a metabolic pathway.



What would be the effect of adding a small amount of a non competitive inhibitor of enzyme 2?

- A. Enzyme 2 would be partially denatured.
- B. Substance X would increase in concentration.
- C. Substance Y would no longer be formed.
- D. The initial reactant would no longer be metabolized.
- E. The effect would be negligible.

99. Which processes are essential in making nitrogen in dead plant material available to growing plants?

- I. ammonification
- II. deamination
- III. nitrification
- IV. nitrogen fixation

- A. I, II and III only
- B. I, II and IV only
- C. I, III and IV only
- D. II, III and IV only



100. The diagram represents two liquids, separated by a membrane through which osmosis can occur.



What movement of molecules will occur?

- A. Molecules of dissolved substance move from left to right.
- B. Molecules of dissolved substance move from right to left.
- C. Overall, water molecules move from left to right.
- D. Overall, water molecules move from right to left.
- E. None of the above

# National Testing Service Past Papers

## NTS TESTING SERVICE NTS ANSWER KEY 2013



Question #	Correct Choice	Question#	Correct Choice	Question#	Correct Choice	Question#	Correct Choice
1	A	26	E	51	-	76	A
2	A	27	C	52	A	77	A
3	E	28	B	53	C	78	A
4	D	29	C	54	A	79	C
5	E	30	A	55	C	80	D
6	A	31	A	56	C	81	C
7	D	32	D	57	B	82	D
8	A	33	D	58	C	83	C
9	D	34	C	59	B	84	A
10	C	35	A	60	A	85	E
11	D	36	B	61	C	86	C
12	A	37	D	62	D	87	A
13	A	38	C	63	B	88	A
14	E	39	-	64	D	89	D
15	A	40	C	65	A	90	B
16	C	41	C	66	C	91	B
17	A	42	B	67	D	92	C
18	B	43	A	68	D	93	D
19	D	44	D	69	A	94	D
20	B	45	B	70	C	95	C
21	A	46	A	71	A	96	B
22	B	47	D	72	C	97	E
23	A	48	D	73	B	98	E
24	A	49	-	74	B	99	C
25	C	50	E	75	C	100	C





# Past Paper 2014

# NATIONAL TESTING SERVICE

# NTS past paper 2014

## ENGLISH

Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters. .

1. **DISTRESS:**

- A. Suffering
- B. lash out
- C. noisy
- D. upset
- E. happiness

2. **SWIFT:**

- A. slow
- B. fast
- C. brief
- D. at once
- E. harden



Read the passage to answer questions

**3-4** What is life? A little scum of no importance on the surface of an unimportant globe circling round a second-rate star? An accidental conglomeration of atoms which have come together by an odd chance, the result of an exceedingly improbable happening? That is what some astronomers would have us think. Looking out into the depth of space, they have discovered a universe of unthinkable dimensions. A billion suns in our own galaxy, beyond it perhaps a billion galaxies, only revealed to us as tiny smudges on a photographic plate. No wonder they are impressed by the enormous disparity between the scaffolding and the result. Life seemed to be, as Jeans said, 'an utterly unimportant by-product' in 'a universe which was clearly not designed for life, and which, to all appearances, is either totally *indifferent* or definitely hostile to it'. It seemed 'incredible that the universe can have been designed primarily to produce life like our own; had it been so, surely we might have expected to find a better proportion between the magnitude of the mechanism and the amount of the product .

2. **The title of the passage can be:**

- A. Gathering of atoms
- B. The life outside the earth
- C. Universe and its unneeded vastness
- D. Life versus Universe



3. **According to author if universe have been designed primarily to produce life like our own then:**

- A. there would have been a smaller proportion for us
- B. there would have been a better proportion. for us
- C. there would have been more luxuries in the universe
- D. there would have be many galaxies containing many creatures
- E. there would have been many new stars and earths.

**Complete the sentences by choosing the most appropriate option, from the given lettered choices (A to E) below each.**

5. The tree must \_\_\_\_\_ **planted over fifty years ago.**

- A. been
- B. be been
- C. would been
- D. have been
- E. have had

6. **It is quite people \_\_\_\_\_ for poor people to be happier than rich**

- A. possible
- B. risky
- C. potential
- D. liable
- E. different

**Identify the word or phrase that needs to be changed for the sentence to be correct:**

7. The office is so busy that two extra clerks have had to be taken on.

A B C D

**No error.**

E

8. Mr. Ahmed is to old to work now; he depends upon his son.

A

B

C

D

No error.

E

Choose the word most similar in meaning to the capitalized one.

9. MEDITATIVE:

A. selfish

B. thoughtful

C. heedless

D. opinion

E. ordinary

10. AMAZEMENT:

A. surprise

B. appreciation

C. criticism

D. praise

E. objection





## PHYSICS

**11. A circuit in which there is a current of 5 amp is changed so that the current falls to zero in 0.1 s. If an average e.m.f of 200 volts is induced. What is the self inductance of the circuit?**

- A. 4 henrys
- B. 8 henrys
- C. 12 henrys
- D. 16 henrys
- E. 20 henrys

**12. The phenomena in which certain metals emit electrons when exposed to high frequency light is known as:**

- A. Photoelectric Effect
- B. Compton's Effect
- C. Henry's Effect
- D. Principle of Relativity
- E. Coulomb's Law



**13. A galvanometer has a resistance of 20 ohms and a full scale deflection when a current of 0.001 ampere flows in it. What is the value of the series resistance to convert it into a voltmeter of range 10 volts?**

- A. 7780 ohms
- B. 9980 ohms
- C. 5580 ohms
- D. 4480 ohms
- E. 3380 ohms

**14. Sodium nucleus consists of 11 protons and 12 neutrons. The conventional symbol of this nucleus is:**

- A.  $_{11}\text{Na}^{11}$
- B.  $_{12}\text{Na}^{12}$
- C.  $_{11}\text{Na}^{23}$
- D.  $_{23}\text{Na}^{23}$
- E.  $_{12}\text{Na}^{11}$

15. The atomic spectra deals with the measurement of:

- A. Wave lengths
- B. Intensities of electromagnetic radiations emitted by atoms
- C. Intensities of electromagnetic radiations absorbed by atoms
- D. All of the above
- E. Both B and C

16. The detection and estimation of an element in a mixture is sometimes nearly impossible, if it is present in very minute traces or if its chemical properties are very similar to those of other elements in the mixture. An effective technique is developed for these purposes is known as:

- A. Simple Analysis
- B. Spectral Analysis
- C. Activation Analysis
- D. Geometric Analysis
- E. Mechanical Analysis

17. How much energy is dissipated as heat in 20 s by a  $100\Omega$  resistor that carries a current of 0.5 A?

- A. 50 J
- B. 100 J
- C. 250 J
- D. 500 J
- E. 1, 000 J



18. A sphere of charge +Q is fixed in a position. A smaller sphere of charge +q is placed near the larger sphere and released from rest. The small sphere will move away from the large sphere with:

- A. Decreasing velocity and decreasing acceleration
- B. Decreasing velocity and increasing acceleration
- C. Decreasing velocity and constant acceleration
- D. Increasing velocity and decreasing acceleration
- E. Increasing velocity and increasing acceleration

19. A 10 nano farad ( $10 \times 10^{-9}\text{F}$ ) parallel plate capacitor holds a charge of magnitude  $50 \mu\text{C}$  on each plate. If the plates are separated by a distance of 0.885 mm, what is the area of each plate?

- A.  $1.0 \text{ m}^2$
- B.  $3.0 \text{ m}^2$
- C.  $5.5 \text{ m}^2$
- D.  $2.5 \text{ m}^2$

20. Kelvin, the unit of thermodynamic temperature is \_\_\_\_\_ of the thermodynamic temperature of the triple point of water.

- A.  $1 / 100$
- B.  $1 / 212$
- C.  $1 / 273,16$
- D.  $1 / 32$
- E.  $1 / 98$

21. The scalar product of  $(2\mathbf{i} - \mathbf{j} + 3\mathbf{k}) \cdot (3\mathbf{i} + 2\mathbf{j} - \mathbf{k})$  is:

- A. 1
- B. 2
- C. 10
- D. 20
- E. 25



22. A rock is thrown straight upward from the edge of a 30 m cliff, rising 10 m then falling all the way down to the base of the cliff. Find the rock's displacement.

- A. 20 meters downward
- B. 30 meters downward
- C. 40 meters upward
- D. 50 meters upward
- E. 60 meters upward

23. A stone dropped from a certain height can reach the ground in 5 s. It is stopped after 3 seconds of its fall and then allowed to fall again. Find the time taken by the stone to reach the ground for the remaining distance.

- A. 2s
- B. 4s
- C. 6s
- D. 8s
- E. 10s

24. A moon of mass ' $m$ ' orbits a planet of mass 100 m. Let the strength of the gravitational force exerted by the planet on the moon be denoted by  $F_1$ , and let the strength of the gravitational force exerted by the moon on the planet be  $F_2$ . Which of the following is true?

- A.  $F_1$  is ten times greater than  $F_2$
- B.  $F_1$  is ten times smaller than  $F_2$
- C.  $F_2$  is ten times greater than  $F_1$
- D.  $F_2$  is ten times smaller than  $F_1$
- E.  $F_1$  is equal to  $F_2$

25. Which one of the following statements is true concerning the motion of an ideal projectile launched at an angle of  $45^\circ$  to the horizontal?

- A. The acceleration vector points opposite to the velocity vector on the way up and in the same direction as the velocity vector on the way down.
- B. The speed at the top of the trajectory is zero.
- C. The object's total speed remains constant during the entire flight.
- D. The horizontal speed decreases on the way up and also decreases on the way down.
- E. The vertical speed decreases on the way up and increases on the way down.

26. A football, at rest on the ground, is kicked with an initial velocity of 10 m/s at a launch angle of  $30^\circ$ . Calculate its total flight time, assuming that air resistance is negligible.

- A. 0.5 s
- B. 1 s
- C. 1.7 s
- D. 2 s
- E. 14 s



27. If the diameter of the earth becomes two times its present value and its mass remains unchanged, then how would the weight of an object on the surface of the earth be affected?

- A. Becomes double
- B. Becomes one fourth
- C. Becomes one third
- D. Remains same
- E. Becomes half .

28. A body having translatory motion possesses and \_\_\_\_\_. In the same way, a body having rotatory motion possesses \_\_\_\_\_ and \_\_\_\_\_.

- A. Angular velocity ... linear velocity ... angular momentum ... linear momentum
- B. Linear velocity ... linear momentum ... angular velocity ... angular momentum
- C. Angular momentum ... angular velocity ... linear momentum ... linear velocity
- D. Linear momentum ... angular velocity ... angular momentum ... linear velocity
- E. Linear monientum ... angular momentum ... linear velocity ... angular velocity

29. When a body moves in the direction of gravitational force i.e. towards the earth, the work is done by the force of gravity on the body and is \_\_\_\_\_ whereas when the body moves against the direction of gravitational force, the corresponding work done is \_\_\_\_\_.

- A. negative ... positive
- B. positive ... negative
- C. positive ... positive
- D. negative ... negative
- E. insufficient information

30. A man pushes a box, initially at rest towards another man by exerting a constant horizontal force  $F$  of magnitude 5N through a distance of 1m. Its final kinetic energy is:

- A. 5 J
- B. 10 J
- C. 15 J
- D. 20 J
- E. 25 J



31. A sound wave with a frequency of 343 Hz travels through the air. What is its wavelength? (speed of sound through air = 343 m/s)

- A. 1 m
- B. 2 m
- C. 3 m
- D. 4 m

32. When a force acts at right angles to the displacement ( $\theta = 90^\circ$ ) the work is zero i.e., the force does not produce work. Identify the example/s from the following when work is zero.

- I. it is considered "hard work" to hold a heavy stone stationary at stretched hand
- II. a person walks along a level surface while carrying a box
- III. when a body moves in circular path

- A. I only
- B. II only
- C. III only
- D. II and III only
- E. I, II, III



33. A neutron travels a distance of 12 m in a time interval of  $3.6 \times 10^{-4}$  s. Assuming its speed was constant, its kinetic energy is: (take  $1.7 \times 10^{-27}$  kg as the mass of neutron)

- A. 3.1 eV
- B. 4.7 eV
- C. 5.78 eV
- D. 6.91 eV
- E. 7.81 eV

34. A student is performing a lab experiment on simple harmonic motion. He has two different springs (with force constants  $k_1$  and  $k_2$ ) and two different blocks (of masses  $m_1$  and  $m_2$ ). If  $k_1 = 2k_2$ , and  $m_1 = 2m_2$ , which of the following combinations would give the student the spring-block simple harmonic oscillator with the shortest period?

- A. The spring with force constant  $k_1$  and the block of mass  $m_1$
- B. The spring with force constant  $k_1$  and the block of mass  $m_2$
- C. The spring with force constant  $k_1$  and the block of mass  $m_1$
- D. The spring with force constant  $k_1$  and the block of mass  $m_2$
- E. All the combinations above would give the same period.



35. A microscope has an objective of 10 mm focal length and eye piece of 25 mm focal length. What is the distance between the lenses, if the object is in sharp focus when it is 10.5 mm from the objectives?

- A. 115 mm
- B. 232.7 mm
- C. 417 mm
- D. 716 mm
- E. 617 mm

36. Light can be polarized by which of the following method/s?

- I. scattering of light
  - II. double refraction
  - III. reflection
- 
- A. I only
  - B. II only
  - C. III only
  - D. I and III only
  - E. I, II and III

37. A steel rod has a length of 15 m at a temperature of  $30^{\circ}\text{C}$ . If the temperature is raised to  $45^{\circ}\text{C}$ . The increase in its length is:  $\alpha = 1.1 \times 10^{-5} \text{ K}^{-1}$ )

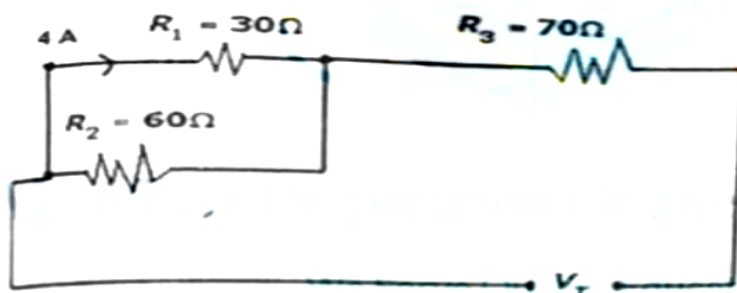
- A.  $537.1 \times 10^{-5} \text{ m}$
- B.  $447.5 \times 10^{-5} \text{ m}$
- C.  $327.5 \times 10^{-5} \text{ m}$
- D.  $247.5 \times 10^{-5} \text{ m}$
- E.  $127.5 \times 10^{-5} \text{ m}$

38. The volume occupied by a gram mole of a gas at  $0^{\circ}\text{C}$  and a pressure of 1 atmosphere is:

- A.  $1 \times 10^3$  liters
- B.  $3 \times 10^3$  liters
- C.  $5 \times 10^3$  liters
- D.  $7 \times 10^3$  liters
- E.  $9 \times 10^3$  liters



29. In the circuit shown below, 4 amperes is the current through  $R_1$ . The potential difference across  $R_1$  in volts is:



- A. 7.5
- B. 30
- C. 60
- D. 120
- E. 160

40. Germanium and silicon are semiconductors having crystalline structures. Both these materials have \_\_\_\_\_ valence electrons in their outer most shells.

- A. 7.5
- B. 30
- C. 60
- D. 120
- E. 160



**CHEMISTRY**

41. An  $\text{SN}^2$  reaction at an asymmetric carbon of a compound always gives:

- A. An metamerism of the substrate
- B. A product with opposite optical rotation
- C. A mixture of diastereomers
- D. A single stereoisomer
- E. The same product

42. In the reaction,  $R-C \equiv C-R \rightarrow ?$  the reagent used to convert alkyne into trans alkene is:

- A. Ni
- B. Lindlar catalyst
- C.  $B_2H_6 / CH_3 COOH$
- D. Li /  $NH_3$
- E.  $C_6H_6$ .



43. Ethanol, when reacted with  $\text{PCl}_5$  gave A,  $\text{POCl}_3$  and  $\text{HCl}$ . A reacts with  $\text{AgNO}_2$ , to form B and  $\text{AgCl}$ . A and B are respectively:

- A.  $\text{C}_2\text{H}_5\text{Cl}$  and  $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$ .
- B.  $\text{C}_2\text{H}_6$  and  $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$
- C.  $\text{C}_2\text{H}_5\text{Cl}$  and  $\text{C}_2\text{H}_5\text{NO}_2$
- D.  $\text{C}_2\text{H}_6$  and  $\text{C}_2\text{H}_5\text{NO}_2$
- E.  $\text{C}_2\text{H}_6$  and  $\text{C}_2\text{H}_6\text{NO}$

44. The false statement regarding saline hydrides is:

- A. They are formed from hydrogen and most electropositive element
- B. They are used as reducing agents
- C. They give  $\text{H}_2$  from  $\text{H}_2\text{O}$
- D. They are ionic in nature
- E. They are covalent in nature

45. Which of the following compounds is formed when sodium burns in excess of air?

- A.  $\text{Na}_2\text{O}$
- B.  $\text{Na}_2\text{O}_3$
- C.  $\text{Na}_2\text{O}_2$
- D.  $\text{NaO}_2$

46.  $\text{H}_2\text{SO}_4$  has great affinity for water because:

- A. It decomposes the acid
- B. It hydrolyses the acid
- C. Acid decomposes water
- D. Acid forms hydrates with water

47. Which of the following is not an interstitial compound?

- A. Cu-Zn
- B. Cu-Zn-Sn
- C. TiH<sub>1.73</sub>
- D. V<sub>2</sub>O<sub>5</sub>

48. Monosaccharides contain \_\_\_\_\_ carbon atoms.

- A. 2-3
- B. 3-10
- C. 5-20
- D. 20-25
- E. Only 5



49. zinc reacts with dil.  $\text{H}_2\text{SO}_4$  to give  $\text{H}_2$ . It also reacts with conc.  $\text{H}_2\text{SO}_4$  to form  $\text{SO}_2$ . In these reactions

- A. Zn reduces  $\text{H}^+$  to  $\text{H}_2$
- B. Zn oxidizes  $\text{H}^+$  to  $\text{H}_2$
- C. Zn reduces  $\text{SO}_4^{2-}$  to  $\text{SO}_2$ .
- D. Zn oxidized  $\text{SO}^{2-}$  to  $\text{SO}$

50. The reaction:  $\text{Cl}_2 + \text{H}_2\text{O} \rightarrow \text{HCl} + \text{HOCl}$  is an example of:

- A. Oxidation reaction
- B. Reduction reaction
- C. Auto-oxidation and reduction reaction
- D. Substitution reaction
- E. Addition reaction

51. Variable oxidation states of transition element compounds is due to:

- A. 4s orbital
- B. Small energy difference between 3s and 4s orbital
- C. Large energy difference between 3s and 4s orbital
- D. Electrons of only 3d orbital take part in bond formation
- E. Electrons of only 4s orbital take part in bond formation

52. Glass is a/an:

- A. Pure solid
- B. Super cooled liquid
- C. Mixture of sodium and calcium
- D. Crystalline form of  $Na_2CO_3$
- E. Alloy

53. Which of the following is/are correct about Ascorbic acid?

- A. Soluble in water
- B. Easily destroyed by oxidation
- C. Its deficiency causes anemia
- D. It helps in healing the wounds
- E. All of the above



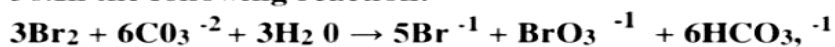
54. Catalyst used in reaction  $CHCl_3 + \frac{1}{2} O_2 \rightarrow COCl_2 + HCl$  is \_\_\_\_\_ and its nature is \_\_\_\_\_.

- A. 5% methyl alcohol ... Negative
- B. 2% Ethyl alcohol ... Negative
- C.  $V_2O_5$  ... Positive
- D.  $Al_2O_3$  ... Negative

55. If products of a reaction act as catalyst, such process is called:

- A. Positive catalyst
- B. Negative catalyst
- C. Auto catalyst
- D. Both A and B

56. In the following reaction:



- A. bromine is reduced and water is oxidized
- B. bromine is both reduced and oxidized
- C. bromine is oxidized and carbonate is reduced
- D. bromine is neither reduced nor oxidized

57. The lower part of the "solvay tower" has been cooled during the manufacture of soda ash because:

- A. this facilitates the production of soda ash
- B. it decreases the solubility of  $\text{Na}_2\text{CO}_3$ ,
- C. this controls the flow of brine
- D. it decreases the solubility of  $\text{NaHCO}_3$ ,

58. Which of the following elements has highest boiling point?

- A. Li
- B. Mg
- C. Sr
- D. Be
- E. Ba



59. When the following reaction is balanced, what is the net ionic charge on the right side of the equation?



- A. +5
- B. +7
- C. +10
- D. +17
- E. The net ionic charge on either side must be zero.

60. In which of the following gaseous equilibrium, more yield of the product is formed by decreasing pressure?

- A.  $\text{N}_2 + \text{O}_2 \rightleftharpoons 2\text{NO}$
- B.  $\text{PCl}_5 \rightleftharpoons \text{PCl}_3 + \text{Cl}_2$
- C.  $2\text{NO}_2 \rightleftharpoons \text{N}_2\text{O}_4$
- D.  $2\text{NH}_3 \rightleftharpoons \text{N}_2 + 3\text{H}_2$

61. Which of the following statements is NOT true for the first law of thermodynamics?

- A. total energy of the system and surrounding is conserved
- B. energy can neither be created nor destroyed
- C. it is the same as law of conservation of energy
- D. total energy of the system is increasing

62. Nitrogen and phosphorus have 3 of their valence electrons unpaired because of:

- A. Auf bau principle
- B. Heisenberg's principle
- C. Hund's rule
- D. Planck's statement
- E. None of the above

63. The chemical analysis of a compound having molecular mass 188 gives, C= 12.8%, H= 2.1% and Br= 85.1%, its molecular formula is:

- A. CH<sub>2</sub>Br
- B. C<sub>2</sub>H<sub>2</sub>Br<sub>2</sub>
- C. C<sub>2</sub>H<sub>4</sub>Br.
- D. CH<sub>2</sub>(Br)<sub>2</sub>
- E. C<sub>2</sub>H<sub>2</sub>(Br)<sub>3</sub>



Educational  
Testing Service

64. The stability of ionic crystal depends principally on:

- A. High electron affinity of anion forming species
- B. Lattice energy of crystal
- C. Low ionization energy of cation forming species
- D. High ionization energy of cation forming species

65. Which is not characteristic of pi bond?

- A. Pi bond is formed when sigma bond already exists
- B. Pi bond results from lateral overlap of atomic orbitals
- C. Pi bonds are formed from hybrid orbitals
- D. pi bonds may be formed by the overlap of p orbitals
- E. All of the above

66. Which of the following statements is/are true with regard on reaction  
 $2\text{SO}_3(\text{g}) \rightleftharpoons 2\text{SO}_2(\text{g}) + \text{O}_2(\text{g})$

In which the forward reaction is exothermic?

- A. The forward reaction is favoured at higher pressure and higher temperature
- B. The forward reaction is favoured at lower pressure and higher temperature
- C. At constant temperature, more SO<sub>2</sub>, is formed at equilibrium if the total pressure is increased
- D. At constant total pressure, more O<sub>2</sub>, is formed at equilibrium if the temperature is increased
- E. Both B&D

67. The chemical reactions in which reactants require high amount of activation energy are generally:

- A. Slow
- B. First fast then slow
- C. First slow then fast
- D. Spontaneous

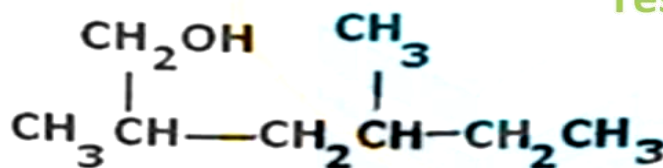
68. In those reactions where determination of enthalpy value is difficult by experiments, in such cases enthalpy value can be calculated by:

- A. Hess's law
- B. Henry's law
- C. Kirchoff's law
- D. Clapeyron equation
- E. Boyle's law



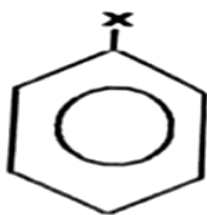
69. IUPAC name of the given compound is:

Educational  
Testing Service



- A. 1,4-Dimethyl hexanol
- B. 2,4-Dimethyl hexanol
- C. 4,5-Dimethyl hexanol
- D. 4-methyl.5 ethyl hexanol
- E. 2,4-Dimethyl hexanol

70. X deactivates the ring and directs ortho and para in ; X is



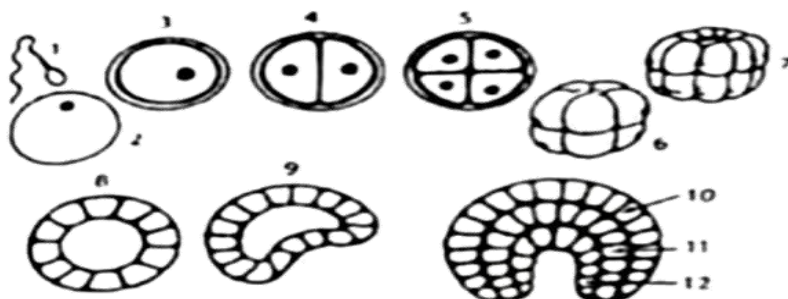
- A. OH
- B. Br
- C.  $NH_3^+$
- D.  $NO_2$
- E.  $NH_2$





**BIOLOGY**

Questions 71-72



71. The first cell to contain the diploid number of chromosomes is:

- A. 2
- B. 3
- C. 4
- D. 6
- E. 9



**Educational  
Testing Service**

72. A female gamete containing the monoploid (haploid) number of chromosomes is:

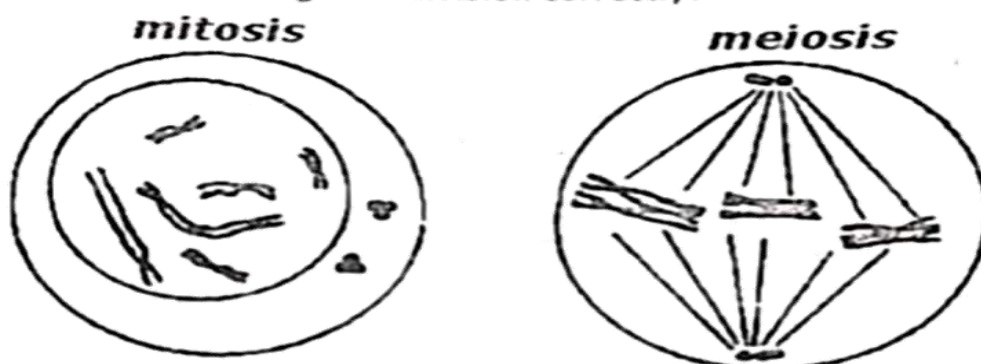
- A. 2
- B. 3
- C. 4
- D. 5
- E. 8

73. An anti codon is the sequence of the nitrogenous bases on the:

- A. complementary strand of DNA which codes for one amino acid
- B. complementary strand of mRNA which codes for one amino acid
- C. tRNA molecule where the amino acid is attached
- D. tRNA molecule which recognizes the appropriate sequence of bases on the mRNA
- E. mRNA molecule which instructs the ribosomes to initiate



74. The diagrams below show chromosomes in a cell undergoing mitosis and in a cell undergoing meiosis. Which of the following names the stages of division correctly?



- Mitosis**
- A. prophase
  - B. Prophase
  - C. metaphase
  - D. metaphase

- Meiosis**
- prophase I
  - metaphase I
  - anaphase I
  - metaphase II



75. Flower colour is controlled by a single pair of alleles. The allele for red flowers is dominant to the allele for white flowers.

A plant homozygous for red flowers is crossed with a plant homozygous for white flowers. All the resulting plants have red flowers (F1 generation). When the F1 generation are crossed with each other, 18 plants are obtained. 12 plants have red

flowers and 6 have white flowers (F2 generation).

What ratio is expected in the F2 generation and what ratio has been obtained?

	Expected ratio red to white	obtained ratio red to white
A	1:1	2:1
B	1:1	3:1
C	3:1	2:1
D	3:1	3:1

76. The following observations refer to evolution:

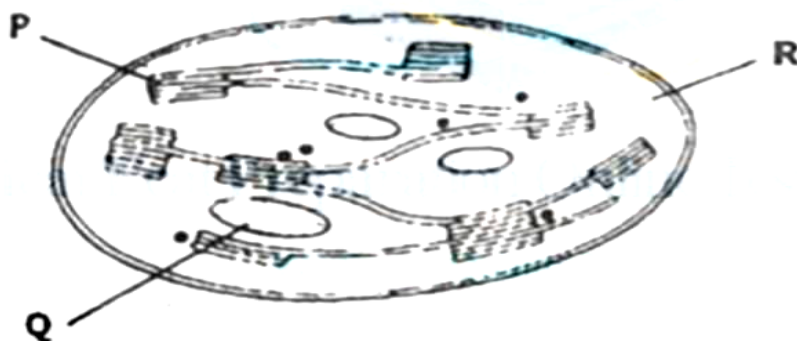
- I. Inherited variations which are 'favoured' in particular environment are passed on.
- II. There is a struggle for existence.
- III. In time, 'favoured' inherited variations may accumulate causing gradual changes in the organism.
- IV. Although populations tend to overproduce, they remain more or less constant in numbers from generation to generation.

In what sequence should the statements be placed to support Darwin's theory of evolution?

- A. I, II, III, IV
- B. II, I, III, IV
- C. III, I, IV, II
- D. IV, I, II, III
- E. IV, II, I, III



77. The diagram shows the ultra structure of a chloroplast as seen in section. What are the functions of P, Q and R?



	P	Q	R
A	Carbohydrate storage	Carbohydrate synthesis	Light absorption
B	Carbohydrate synthesis	Carbohydrate storage	Light absorption
C	Carbohydrate synthesis	Light absorption	Carbohydrate storage
D	Light absorption	Carbohydrate storage	Carbohydrate synthesis
E	Light absorption	Carbohydrate synthesis	Carbohydrate storage

78. Consider the following statements about biological communities

- I. Their members share a common gene pool.
- II. The community remains stable even though some physics aspect of the environment may undergo change.
- III. It consists of all the populations living in a particular ares
- IV. A community interacts with non-living environment and both function together to form ecosystem.

Which two of the above statements are true?

- A. 1 and 2
- B. 1 and 3
- C. 2 and 4
- D. 2 and 3
- E. 3 and 4



79. Four events in the transmission of nerve impulses across synapses are:

- I. depolarisation of the presynaptic membrane
- II. propagation of postsynaptic action potential
- III. reabsorption of the transmitter substance
- IV. release of transmitter substance into the synaptic cleft

In which sequence do these events occur?

FIRST → LAST

- A. I III II IV
- B. I IV II III
- C. IV I III II
- D. IV III I II
- E. II I IV III

80. Joints found at the vertebrae are:

- A. gliding joints
- B. sliding joints
- C. partially moveable joints
- D. fixed joints
- F. pivot joints

81. How many meninges cover the human brain?

- A. 5
- B. 4
- C. 3
- D. 1

86. The diagram shows how water is lost from a leaf:



By which process is the water lost?

- A. osmosis
- B. photosynthesis
- C. translocation
- D. transpiration
- E. transcription



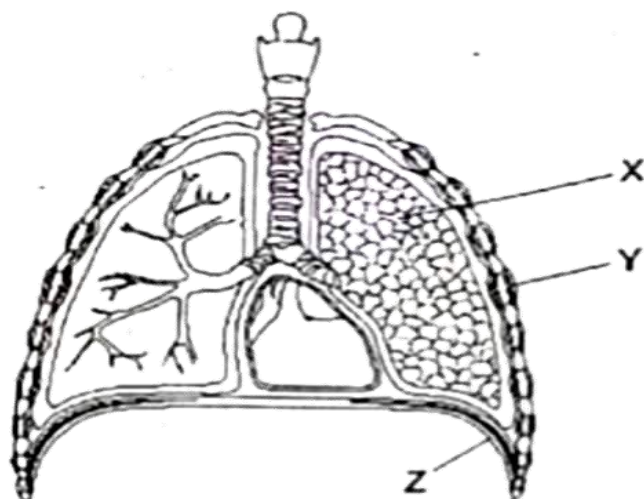
87. Which of the following is true in angiosperm life cycle?

- A. Gametophyte are photosynthetic and partially independent than sporophyte
- B. Sporophytes are totally dependent on gametophytes
- C. Gametophytes are totally dependent on sporophytes
- D. Both gametophytes and sporophytes are totally dependent on each other
- E. Both gametophytes and sporophytes are totally independent of each other

88. The adaptive feature(s) which help(s) the fish to live in water include(s):

- A. A tail and an air bladder
- B. Unpaired and paired fins
- C. Streamlined body
- D. Gills and strong sense of smell
- E. All of the above

89. The diagram represents the human respiratory system.



Which structure(s) contain(s) muscles that contract when breathing in? .

- A. X only
- B. X and Y only
- C. X and Z only
- D. Y and Z only
- E. X, Y and Z

90. What is the correct order of arthropod groups, from those with most legs to those with fewest legs?

- A. arachnids ... crustaceans ... insects ... myriapods
- B. crustaceans ... myriapods ... insects ... arachnids
- C. insects ... arachnids ... myriapods ... crustaceans
- D. myriapods ... arachnids ... crustaceans ... insects
- E. myriapods ... crustaceans ... arachnids ... insects

91. When a red stain is added to a culture containing both living and dead cells, only the dead cells take up the stain.

Which structure(s) prevent(s) the stain entering the living cells?

- A. cell membrane
- B. cell wall
- C. cytoplasm
- D. vacuole
- E. all of the above



92. Which of the following statements concerning nucleolus is correct?

- A. It disappears at the time of cell division
- B. There is only one nucleolus in every cell
- C. It plays important role in the synthesis of ribonucleic acid and ribosomes in prokaryotic cells
- D. It helps in destroying worn out organelles
- E. It captures energy for the cell

93. In birds the male is the homogametic sex. A male bird showing the recessive trait was mated with a female showing the dominant trait of a characteristic governed by a pair of alleles which are sex linked. What is the probability that the male offspring will show the dominant trait?

- A. 0
- B. 0.25
- C. 0.50
- D. 0.75
- E. 1.00



94. In an experiment, the production of hormone secretin was blocked. As a result, levels of all of the following enzymes were affected EXCEPT:

- A. trypsin
- B. pepsin
- C. chymotrypsin
- D. amylase
- E. lipase

95. At what point are two populations descending from the same ancestral stock considered separate species?

- A. When they can no longer produce viable, fertile offspring
- B. When they look significantly different from each other
- C. When they can interbreed successfully and produce offspring
- D. When their habitats are separated by a significantly large distance so that they cannot meet
- E. Both B & C

96. Living things that would be the first to experience adverse effects if large amounts of carbon dioxide were taken out of the biosphere are:

- A. Decomposers (e.g. bacteria and fungi)
- B. Producers (e.g. green plants)
- C. Primary consumers (e.g. mice)
- D. Secondary consumers (e.g. snakes)
- E. Tertiary consumers (e.g. hawks)

97. which of the following structure(s) is/are found in a generalized bacterial cell?

- A. flagellum
- B. pili
- C. capsule
- D. cell wall
- E. all of the above

98. The gland known as the "gland of emergency" is the:

- A. Pituitary
- B. Adrenal
- C. Thyroid
- D. Parathyroid
- E. Pancreas



99. The autonomic nervous system controls all of the following activities except:

- A. Digestion of food
- B. Heart beat
- C. Contraction of pupil of eye
- D. Thought
- E. Breathing rate

100. At the northern hemisphere, a tundra type of growth:

- A. is impossible
- B. occurs only in winter
- C. lasts only for two to three months
- D. is in the form of a wide land
- E. is in the form of small patches of land





# National Testing Service Past Papers

## NTS TESTING SERVICE NTS ANSWERE KEY 2014



Question#	Correct Choice	Question#	Correct Choice	Question#	Correct Choice	Question#	Correct Choice
1	E	26	B	51	-	76	E
2	A	27	B	52	B	77	D
3	D	28	B	53	E	78	E
4	B	29	B	54	B	79	B
5	D	30	A	55	C	80	A
6	A	31	A	56	B	81	C
7	E	32	E	57	D	82	E
8	B	33	C	58	D	83	A
9	B	34	B	59	D	84	D
10	A	35	B	60	B	85	C
11	A	36	E	61	D	86	D
12	A	37	D	62	C	87	C
13	B	38	-	63	B	88	E
14	C	39	D	64	B	89	D
15	D	40	B	65	C	90	E
16	C	41	B	66	E	91	A
17	D	42	A	67	A	92	A
18	D	43	C	68	A	93	E
19	A	44	E	69	E	94	B
20	C	45	C	70	B	95	A
21	A	46	D	71	B	96	B
22	B	47	D	72	A	97	E
23	B	48	B	73	D	98	B
24	E	49	E	74	B	99	D
25	E	50	C	75	C	100	D



# Past Paper 2015

# NATIONAL TESTING SERVICE

## NTS past paper 2015

### ENGLISH

Identify the word or phrase that needs to be changed for the sentence to be correct:

1. If the children do their homework quickly, they will have time to
- A B c d

Watch television . No Error .

E

2. The bus stopped too take up three or four people who were waiting by
- A B C
- the post office . No error
- D E



Educational  
Testing Service

Choose the word most similar in meaning to the capitalized one.

3. RELIEVED:

A. worried  
B. anxious  
C. relaxed  
D. alarmed

4. BRUTAL:

A. kind  
B. cruel  
C. polished  
D. smooth  
E. tender

**Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters.**

**5. CONVICT:**

- A. prisoner
- B. crook
- C. acquit
- D. hire
- E. Stretch

**6. AMUSED :**

- A. Smiling
- B. Pleased
- C. Annoyed
- D. Delighted



**Read the passage to answer questions 7-8**

In earlier times, when every substance was believed to have its own qualities, there was no difficulty in believing that some substances were endowed with life, others not. Wood was wood, and water was water, and though transformations did occur, as in the disappearance of wood in the fire, they were not surprising in a world where the most miraculous changes were taking place under everyone's every day. There was nothing but 'doth suffer a sea-change into something rich and strange'. A seed put into the ground became in a short time a plant with leaves and flowers: the white and yolk of an egg turned into the flesh and bones and feathers of a chicken, which, no sooner was the shell cracked, jumped out and started running about.

**7. Some substances are alive and some are not:**

**Which of the following statement best describes this belief?**

- A. The transformation in natural substances was unnoticed in ancient times
- B. There was no transformation in natural substances in ancient times
- C. There was no concept of dead and alive things in the past
- D. The burning of wood is not an example of transformation
- E. None of the above

8. There was nothing but "Doth suffer a sea-change into something rich and strange" means:

- A. The transformation of seed into a tree
- B. In everyday life natural things change drastically
- C. The suffering of change are always enormous
- D. Nature does not support any change
- E. Both A and B

Complete the sentences by choosing the most appropriate from the given lettered choices (A to D) below .

9. The milkman \_\_\_\_\_ many bottles of milk to our school everyday.

- A. delivers
- B. has deliver
- C. have deliver
- D. delivering

10. I was having a cup \_\_\_\_\_ tea when he knocked on the door.

- A. off
- B. at
- C. an
- D. of
- E. over



**PHYSICS**

11. Two spherical balls of 2.0 kg and 3.0 kg masses are moving towards each other with velocities of 6 m/s and 4 m/s respectively. What must be the velocity of the smaller ball after collision, if the velocity of the bigger ball is 3 m/s?

- A. 1.5 m/s
- B. 2.5 m/s
- C. 3.5 m/s
- D. 4.5 m/s
- E. 5.5 m/s

12. An apple is thrown with a speed of 30 m/s in a direction  $30^\circ$  above the horizon. Find out its horizontal range. ( $g = 9.8 \text{ m/s}^2$ ).

- A. 20 m
- B. 40 m
- C. 60 m
- D. 80 m
- E. 100 m



13. A 1000 kg vehicle is turning round a corner at 10 m/s as it travels along an arc of a circle. If the radius of the circular path is 10 m, how large a force must be exerted by the pavement on the tyres to hold the vehicle in the circular path?

- A.  $1.0 \times 10^4 \text{ N}$
- B.  $3.0 \times 10^4 \text{ N}$
- C.  $5.0 \times 10^4 \text{ N}$
- D.  $7.0 \times 10^4 \text{ N}$
- E.  $9.0 \times 10^4 \text{ N}$

14. Consider the following examples of motion:

- I. The daily motion of the earth about its own axis
- II. The motion of planets round the sun
- III. Sugar cane crushing machine is run by a camel that moves in circular path around the machine.
- IV. Rotation of fly wheel about its axle.

Which of the following is correct?

- A. I and II are examples of spin motion.
- B. I and II are examples of orbital motion.
- C. II and IV are examples of spin motion.
- D. III and IV are examples of orbital motion.
- E. I and IV are examples of spin motion and II and III are examples of orbital motion.

15. What will be gravitational force of attraction between two balls each weighing 5 kg, when placed at a distance of 0.33 m apart. ( $G = 6.673 \times 10^{-11} \text{ Nm}^2/\text{kg}^2$ )

- A.  $9.1 \times 10^{-8} \text{ N}$
- B.  $7.1 \times 10^{-8} \text{ N}$
- C.  $6.1 \times 10^{-8} \text{ N}$
- D.  $3.5 \times 10^{-8} \text{ N}$
- E.  $1.5 \times 10^{-8} \text{ N}$

16. A 70 kg sportsman runs up a long flight of stairs in 4 seconds. The vertical height of the stairs is 4.5 m. What will be his power output in watts?

- A.  $7.7 \times 10^2 \text{ W}$
- B.  $8.8 \times 10^3 \text{ w}$
- C.  $9.5 \times 10^3 \text{ w}$
- D.  $10.2 \times 10^4 \text{ w}$
- E.  $13.5 \times 10^7 \text{ w}$



17. Calculate the final kinetic energy when a shop keeper pushes a fruit crate, initially at rest towards another shopkeeper by exerting a constant horizontal force  $F$  of magnitude 5N through a distance of 1 meter.

- A. 2J
- B. 3 J
- C. 5 J
- D. 7 J
- E. 9J

18. When the component of the force is in the same direction of the displacement ( $\theta = 0^\circ$ ), the work is \_\_\_\_\_ when the direction of the force is opposite to the direction of displacement ( $\theta = 180^\circ$ ), the work is \_\_\_\_\_ and when the force acts at right angles to the displacement ( $\theta = 90^\circ$ ), the work is \_\_\_\_\_.

- A. negative ... zero ... positive
- B. positive ... negative ... zero
- C. negative ... positive ... zero
- D. zero ... positive ... negative
- E. positive ... zero ... negative



19. A train is approaching a station at 90 km/h sounding a whistle of frequency 1000 Hz what will be the apparent frequency heard by The listener sitting on the platform if the train moves away from the station with the same speed? (speed of sound = 340 m/s).

- A. 931.5 Hz
- B. 105.7 Hz
- C. 135.9 Hz
- D. 153.1 Hz
- E. 164.9 Hz

20 . A Simple pendulum completes one oscillation in 4 seconds. Calculate its length when  $g = 9.8 \text{ m/S}^2$ , as the time period of simple pendulum is given by  $T = 2\pi \sqrt{l/g}$ .

- A. 3.973 m
- B. 5.123 m
- C. 7.111 m
- D. 9.231 m
- E. 12.141 m



21.  $m\lambda = 2d \sin\theta$  , this relation is called as \_\_\_\_\_.

- A. Coulomb's Law
- B. Bragg's Law
- C. Faraday's Law
- D. Ohm's Law
- E. Gravitationa! Law

22. A microscope has an objective of 10 mm focal length and eye piece of 25 mm focal length. What is the distance between the lenses, if the object is in sharp focus when it is 10.5 mm from the objective?

- A. 232.7 mm
- B. 431.1 mm
- C. 511.9 mm
- D. 711.8 mm
- E. E. 913.7 mm

23. A gas is enclosed in a container fitted with a piston of cross sectional area  $0.10\text{m}^2$ . The pressure of the gas is maintained at  $8000\text{ N/m}^2$ . When heat is slowly transferred, the piston is pushed up through a distance of  $4.0\text{ cm}$ . If  $42\text{ J}$  heat is transferred to the system during the expansion, what is the change in internal energy of the system?

- A.  $5\text{ J}$
- B.  $10\text{ J}$
- C.  $20\text{ J}$
- D.  $30\text{ J}$
- E.  $40\text{ J}$

24. A particle carrying charge of  $2e$  falls through a potential difference of  $3.0\text{V}$ . Calculate the energy acquired by it.

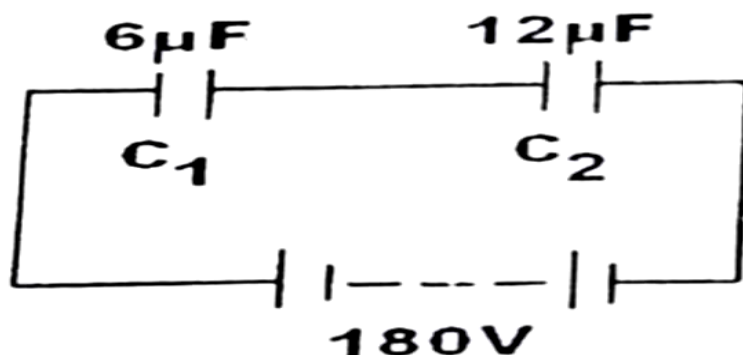
- A.  $9.6 \times 10^{-19}\text{ J}$
- B.  $12.1 \times 10^{-19}\text{ J}$
- C.  $14.5 \times 10^{-19}\text{ J}$
- D.  $16.7 \times 10^{-19}\text{ J}$
- E.  $18.5 \times 10^{-19}\text{ J}$



25. The total outward flux over any closed hypothetical surface is called \_\_\_\_\_ is equal to the total charge enclosed divided by  $\epsilon_0$  irrespective of the way in which the charge is distributed.

- A. Coulomb surface
- B. Gaussian surface
- C. Ohm surface
- D. Faraday surface
- E. Newton surface

26. Two capacitors  $C_1$  ( $6\mu\text{F}$ ) and  $C_2$  ( $12\mu\text{F}$ ) are in series across a  $180\text{ volts d.c. supply}$ . Calculate the potential difference across each capacitor ( $C_1$  and  $C_2$ ).



- A. 98 volts ... 32 volts
- B. 120 volts ... 60 volts
- C. 68 volts ... 96 volts
- D. 30 volts ... 65 volts
- E. 25 volts ... 25 volts

27. **0.75 A current flows through an iron wire when a battery of 1.5 volt is connected across its ends. The length of the wire is 5.0 m and its cross sectional area is  $2.5 \times 10^{-7} \text{ m}^2$ . What is the resistivity of Iron?**

- A.  $9.0 \times 10^{-7} \Omega \text{ m}$
- B.  $7.0 \times 10^{-7} \Omega \text{ m}$
- C.  $5.0 \times 10^{-7} \Omega \text{ m}$
- D.  $3.0 \times 10^{-7} \Omega \text{ m}$
- E.  $1.0 \times 10^{-7} \Omega \text{ m}$



28. **The potential difference between the terminals of a battery in an open circuit is 2.2 V. When it is connected across a resistance of  $5.0 \Omega$ , the potential falls to 1.8V. What is the internal resistance of the battery? (Approx)**

- A.  $9.11 \Omega$
- B.  $2.11 \Omega$
- C.  $3.11 \Omega$
- D.  $1.11 \Omega$
- E.  $0.11 \Omega$

29. **A 20.0 cm wire carrying a current of 10.0 A is placed in a uniform magnetic field of 0.30 T. If the wire makes an angle of  $40^\circ$  with the direction of magnetic field, find the (approx) magnitude of the force acting on the wire? ( $\sin 40^\circ = 0.642$ )**

- A. 2.71 N
- B. 0.39 N
- C. 6.61 N
- D. 7.61 N
- E. 9.91 N

30. **A circuit in which there is a current of 10 amperes is changed so that the current falls to zero in 0.5 seconds. If an average e.m.f. of 400 volts is induced, what is the self inductance of the circuit?**

- A. 10 henrys
- B. 20 henrys
- C. 30 henrys
- D. 40 henrys
- E. 50 henrys

31. Identify the instrument/s which is/are used for the measurement of resistance:

- I. Wheatstone Bridge
- II. Meter Bridge
- III. Post office Box
- IV. Ohmmeter

- A. I only
- B. I and II only
- C. II and III only
- D. III and IV only
- E. I, II, III and IV



32. In a certain circuit, a transistor has a collector current of 10 mA and a base current of 40  $\mu$ A. What is the current gain of the transistor?

- A. 150
- B. 200
- C. 250
- D. 300
- E. 350

33. A particle of mass 5 mg moves with speed of 8 m/s. Calculate its de Broglie wavelength ( $h = 6.63 \times 10^{-34}$  Js)

- A.  $0.71 \times 10^{-29}$  m
- B.  $1.66 \times 10^{-29}$  m
- C.  $2.66 \times 10^{-29}$  m
- D.  $3.77 \times 10^{-29}$  m
- E.  $5.71 \times 10^{-29}$  m

34. X-rays are also known as:

- A. Rydberg rays
- B. Roentgen rays
- C. Ultraviolet rays
- D. Zig-zag rays
- E. Ruby rays

35. When we measure the nuclear masses and compare them with the masses of the constituent nucleus in free states. The mass of the nucleus is always less than the mass of the constituent nucleons. This difference in mass is known as:

- A. Mass Defect
- B. Mass Value
- C. Mass Disorder
- D. Mass Energy
- E. Mass Nucleus

36. \_\_\_\_\_ are very high energy electromagnetic radiations of extremely short wavelength emitted from the nuclei of radioactive atoms originating from the high energy transitions of the nucleons in the nuclei.

- A. Alpha rays
- B. Beta rays
- C. Gamma rays
- D. Electromagnetic rays
- E. Ultraviolet rays

37. Kelvin, is the unit of thermodynamic temperature, which is \_\_\_\_\_ of the thermodynamic temperature of the triple point of water.

- A.  $1 / 100.6$
- B.  $1 / 273.16$
- C.  $1 / 32.6$
- D.  $1 / 241.5$
- E.  $1 / 115.7$



38. Two forces of magnitude 10 N and 20 N act on a body in directions making angles  $30^\circ$  and  $60^\circ$  respectively with x-axis. What is the resultant force?

- A. 17 N
- B. 19 N
- C. 23 N
- D. 29 N
- E. 37 N

39. A 100 ka golf ball is moving to the right with a velocity of 20 m/s. It makes a head on collision with an 8 kg steel ball, initially at rest. Compute velocities of the balls after collision?

- A. -19.5 m/s and 0.5 m/s
- B. -17.1 m/s and 1.5 m/s
- C. - 15.1 m/s and 2.5 m/s
- D. -13.7 m/s and 3.5 m/s
- E. -11.9 m/s and 6.7 m/s

40. Two bodies 'X' and 'Y' are attached to the ends of a string which passes over a pulley so that the two bodies hang vertically. If the mass of the body 'X' is 5 kg and that of body 'Y' is 4.8 kg. Find the acceleration? ( $g = 9.8 \text{ m/s}^2$ )

- A.  $0.2 \text{ m/s}^2$
- B.  $1.7 \text{ m/s}^2$
- C.  $3.7 \text{ m/s}^2$
- D.  $4.9 \text{ m/s}^2$
- E.  $9.1 \text{ m/s}^2$

**CHEMISTRY**

41. In which of the following compound carbon uses  $sp^3$  hybrid orbitals for bond formation?

- A.  $C_2H_6$
- B.  $C_2H_4$
- C.  $(CH_3)_3COH$
- D.  $CH_2=C=O$

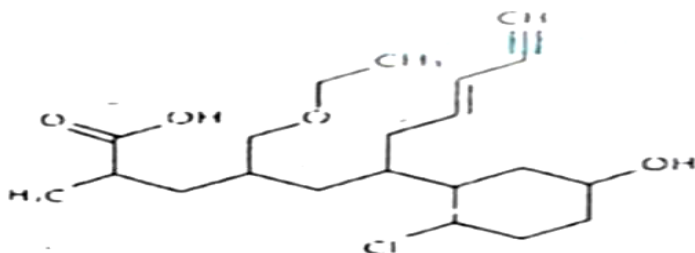
42. The table shown below gives the bond dissociation energies of single covalent bonds of carbon atom with elements A, B, c and d.

BOND	$K_{\text{dissociation}}$ (Kj.mole <sup>-1</sup> )
C – A	240
C – B	328
C – C	276
C – D	485

Which of the following is the smallest atom ?

- A. A
- B. B
- C. C
- D. D

43. The IUPAC name for the structure below ends with what suffix?

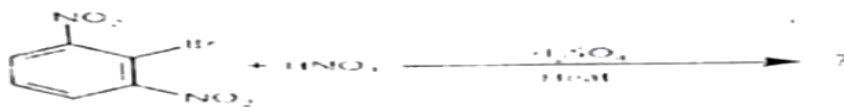


- A. -ol
- B. -ide
- C. -oic acid
- D. -yne





44. What is the major product of nitration reaction below?



- A.
- B.
- C.
- D.

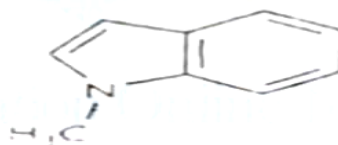


Educational  
Testing Service

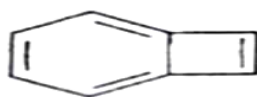
45. Which of the molecules shown below are aromatic?



Compound I



Compound II



Compound III

- A. I only  
B. II only  
C. I and III only  
D. I, II and III



46. What are the major products of the reaction shown below?



- A. Phenol and bromopropane
- B. Bromobenzene and propanol
- C. Bromobenzene and propane
- D. Benzene and propane

47. Commercial hydrogen is obtained from:

- A. coal gas
- B. oil gas
- C. marsh gas
- D. producer gas



48. The ionization of hydrogen atom gives :

- A. hydride ion
- B. hydronium ion
- C. proton
- D. hydroxyl ion

49. Which is most basic in character?

- A. RbOH
- B. KOH
- C. LiOH
- D. NaOH

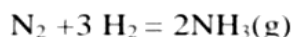
50. Oxygen does not react with:

- A. P
- B. Na
- C. S
- D. Cl

51. Physical properties of Ethyne is/are:

- A. It is colourless gas with sweet smell
- B. It is sparingly soluble in water
- C. It is less denser than air
- D. It explodes on compression to a liquid because of unstable nature
- E. All of the above .

52. How will the equilibrium of the following reaction be affected if additional nitrogen is added?



- A. It will be shifted to the right.
- B. It will be shifted to the left.
- C. It will be unaffected.
- D. The effect on the equilibrium cannot be determined without more information.
- E. More  $\text{NH}_3$  will be produced.

53.  $\text{NH}_3$  (amine) is an example of:.

- A. Negative ligand
- B. Anionic ligand
- C. Neutral ligand
- D. Organic ligand
- E. Both A and B



54. the hybridization of atomic orbitals of N in  $\text{N}_2$ ,  $\text{NO}_3^-$  and  $\text{NH}_4^+$  are, respectively:

- A.  $sp$ ,  $sp^2$ ,  $sp^3$
- B.  $sp$ ,  $sp^3$ ,  $sp^2$
- C.  $sp^2$ ,  $sp$ ,  $sp^3$
- D.  $sp^2$ ,  $sp^3$ ,  $sp$

55. The dipole moments of the given molecules ( $\text{BF}_3$ ,  $\text{NF}_3$ ,  $\text{NH}_3$ ) are such that:

- A.  $\text{BF}_3 > \text{NF}_3 > \text{NH}_3$
- B.  $\text{NF}_3 > \text{BF}_3 > \text{NH}_3$
- C.  $\text{NH}_3 > \text{NF}_3 > \text{BF}_3$
- D.  $\text{NH}_3 > \text{BF}_3 > \text{NF}_3$
- E.  $\text{NH}_3 = \text{BF}_3 = \text{NF}_3$

56. The unit cell with crystallographic dimensions  $a = b \neq c$ ,  $\alpha = \beta = \gamma = 90^\circ$  is:

- A. Cubic
- B. Tetragonal.
- C. Monoclinic
- D. Hexagonal

57.  $H_2O$  has a higher boiling point than HF because:

- A.  $H_2O$  is more polar than HF
- B.  $H_2O$  can form more hydrogen bonds
- C.  $H_2O$  has a higher molecular weight
- D.  $H_2O$  has more atoms
- E.  $H_2O$  does not have a higher boiling point than HF



58. Which of the following best describes the emission spectrum of atomic hydrogen?

- A. a discrete series of lines of equal intensity and equally spaced with respect to wavelength
- B. a series of only four lines
- C. a continuous emission of radiation of all frequencies
- D. several discrete series of lines with both intensity and spacings between lines decreasing as the wavenumber increases with each series.

59. Ethyl alcohol when treated with concentrated  $H_2SO_4$  may give: C.

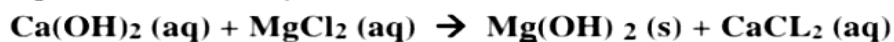
- A. only diethyl sulphate
- B. only diethyl ether
- C. only ethylene
- D. all of the above

60. Strontium lies between calcium and barium in Group IIA in the Periodic Table. Which of the following properties could be predicted for strontium?

- A. It forms a water-soluble carbonate which does not decompose on heating.
- B. It forms a sparingly soluble sulphate.
- C. It forms a nitrate which decomposes on heating to form strontium nitrite and oxygen.
- D. It is reduced by cold water, liberating hydrogen.

61. Magnesium oxide is used in the making of the lining of blast furnaces. It is extracted from seawater as follows.

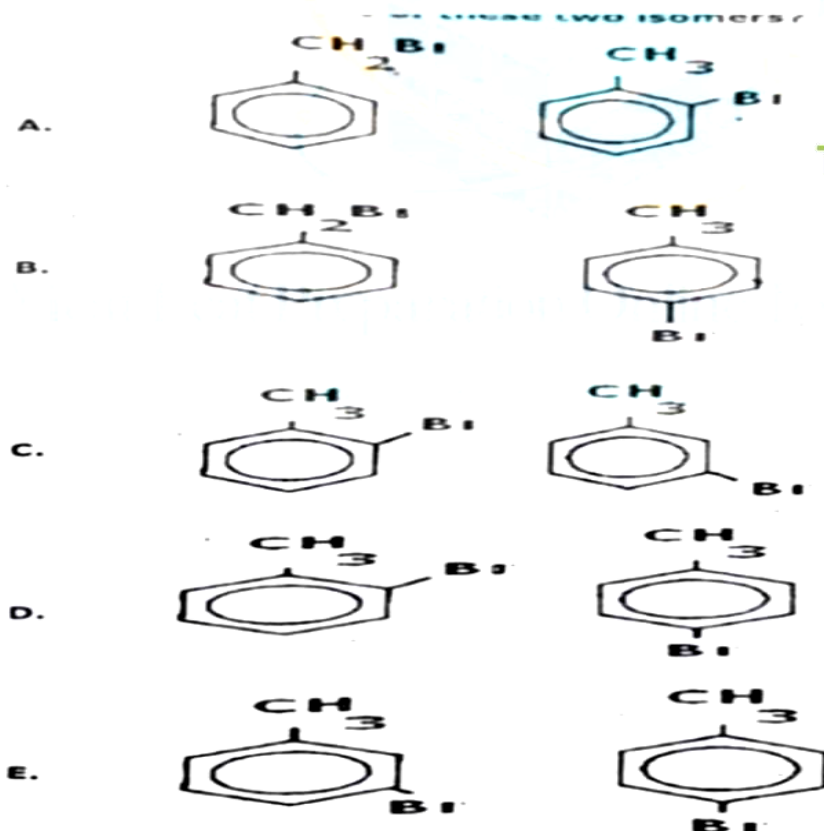
Aqueous calcium hydroxide is added to seawater.



The magnesium hydroxide is then filtered off and roasted. Which of the following comparisons between calcium and magnesium explains why magnesium hydroxide forms?

- A. Magnesium is less electropositive than calcium.
- B. Magnesium is lower than calcium in the reactivity series.
- C. The enthalpy change of hydration for  $\text{Mg}^{2+}$  is less exothermic than for  $\text{Ca}^{2+}$ .
- D. The solubility product for  $\text{Mg(OH)}_2$  is lower than that for  $\text{Ca(OH)}_2$ .
- E. The magnitude of the lattice energy of  $\text{Mg(OH)}_2$  is less than that of  $\text{Ca(OH)}_2$ .

62. When methylbenzene is treated with bromine in the presence of a catalyst, a mixture of two monobromo isomers is formed. What are the structures of these two isomers?



63. The series limit for the Balmer series of hydrogen spectrum occurs at 3664 Å. Calculate Ionization energy of hydrogen atom.

- A.  $21.7 \times 10^{-19}$  J
- B.  $6.626 \times 10^{-34}$  J
- C.  $5.425 \times 10^{-19}$  J
- D.  $3664 \times 10^{-10}$  J
- E.  $3 \times 10^8$  J

64. Bond energy between nitrogen atoms in  $N_2$  molecule is:

- A. 242 KJ mol<sup>-1</sup>
- B. 820 KJ mol<sup>-1</sup>
- C. 498 KJ mol<sup>-1</sup>
- D. 347 KJ mol<sup>-1</sup>
- E. 946 KJ mol<sup>-1</sup>



65. The solubility product for  $Baso_4$  at 18-25°C is:

Educational  
Testing Service

- A.  $1.0 \times 10^{-10}$  mole<sup>2</sup> dm<sup>-6</sup>
- B.  $8.7 \times 10^{-36}$  mole<sup>2</sup> dm<sup>-6</sup>
- C.  $1.8 \times 10^{-21}$  mole<sup>2</sup> dm<sup>-6</sup>
- D.  $8.4 \times 10^{-28}$  mole<sup>2</sup> dm<sup>-6</sup>
- E.  $3.5 \times 10^{-52}$  mole<sup>2</sup> dm<sup>6</sup>

66. Atomic number of C is 6 and H is 1. How many electrons are present in 1.6 grams of methane?

- A.  $6.02 \times 10^{23}$
- B.  $1.204 \times 10^{23}$
- C.  $1.806 \times 10^{23}$
- D.  $2.408 \times 10^{23}$
- E.  $3.01 \times 10^{23}$

67. A bottle of cold drink contains 200 ml liquid in which  $CO_2$  is 0.1 molar. Suppose  $CO_2$ , behaves like an ideal gas, the volume of dissolved  $CO_2$ , at S.T.P is:

- A. 0.224 litre
- B. 0.448 litre
- C. 22.4 litre
- D. 2.24 litre
- E. 25.5 litre

68. Surface tension in a liquid is caused by:

- A. a lack of horizontal intermolecular forces
- B. greater rate of evaporation at the surface than from the interior
- C. reduced rate of intermolecular collisions at the surface
- D. greater fluidity

69. How many electrons can have the values  $n = 2$ ,  $l = 1$  and  $s = +1/2$  in the configuration  $1s^2, 2s^2, 2p^3$ ?

- A. 1
- B. 3
- C. 5
- D. 7
- E. 9



70. If uncertainty in the position of an electron is zero, the uncertainty in its momentum is:

- A. 1
- B. zero
- C.  $2\pi$
- D.  $h/4\pi$
- E. infinite

**BIOLOGY**

71. The statements are all descriptions of cell structures.

1. surrounded by a single membrane and enclosing a large fluid-filled space
2. surrounded by a single membrane and enclosing digestive enzymes
3. formed by two membranes enclosing a matrix, the inner membrane is folded
4. formed by a membrane that has flattened sacs and tubular structures interconnected throughout the cell
5. formed of nucleic acid and protein

. Which row shows the typical cell in which these cell structures are found?

	Plant Cell	Animal Cell
A	1,3,4 and 5	2,3,4 and 5
B	1,2,3 and 4	1,2,3 and 5
C	2,4 and 5	1,4 and 5
D	3,4 and 5 only	2,3 and 5 only



72. A short piece of DNA 30 base pairs long was analyzed to find the number of nucleotide bases in each of the polynucleotide strands. Some of the results are shown below.

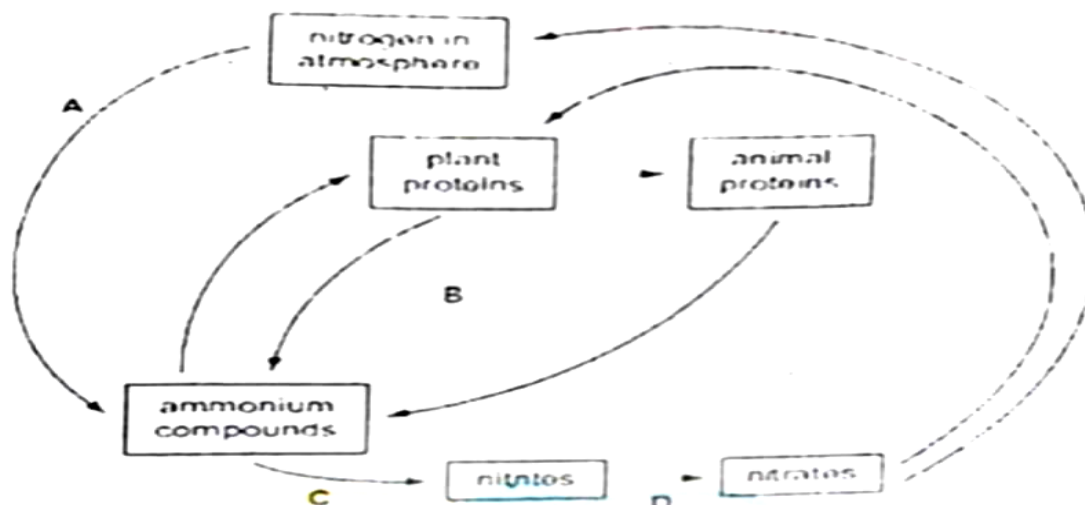
	Number of nucleotide bases			
	A	C	G	T
Strand 1		12		6
Strand 2				8

How many nucleotides containing guanine were present in strand 1?

- A. 2
- B. 3
- C. 4
- D. 6



73. The diagram shows a simplified nitrogen cycle. During which stage does decomposition start?



- A. A
- B. B
- C. C
- D. D



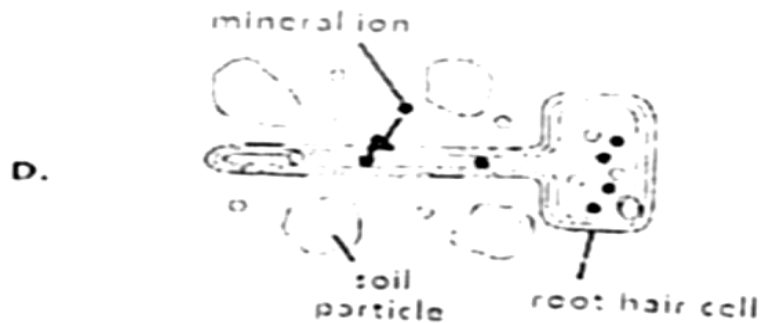
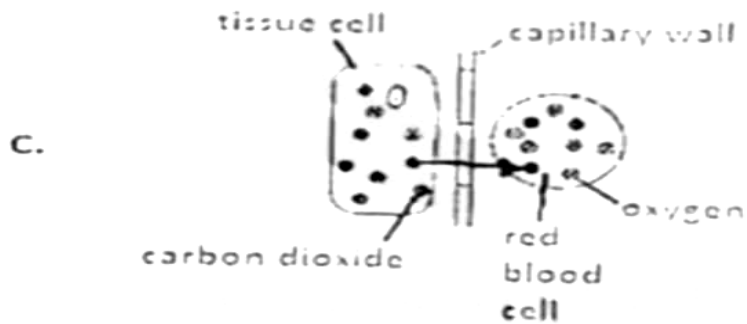
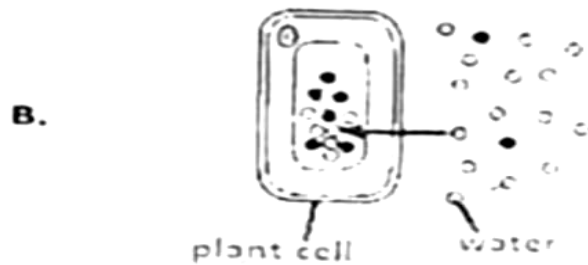
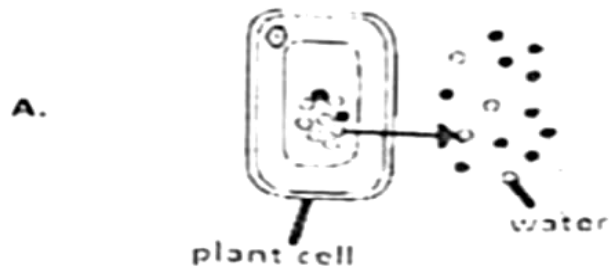
74. Antheridia and archegonia are \_\_\_\_\_ organs in bryophytes .

- A. reproductive
- B. digestive
- C. respiratory
- D. none of the above

75. Which of the following statements is true about savannah?

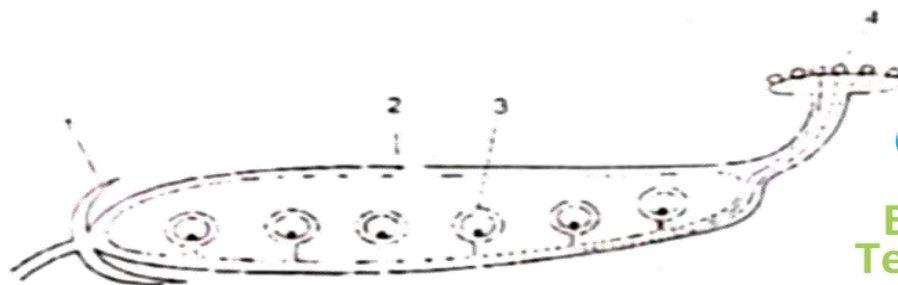
- A. dry season is very long and temperature ranges more than  $18^{\circ}\text{C}$  throughout the year
- B. its plants do not shed off their leaves
- C. the sub soil is permanently frozen
- D. rain fall is upto 200 cm per year.
- E. evaporation exceeds rainfall

76. Which diagram illustrates the process of active transport .



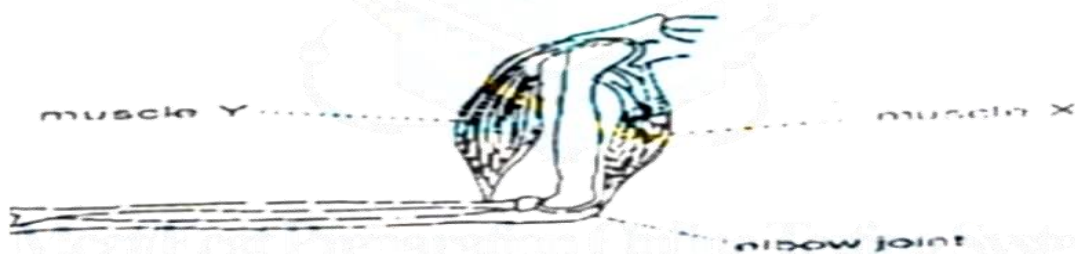
77. The diagram shows part of a flower after it has been pollinated.

which row correctly identifies one of the labelled structures?



	Labeled structure	Flower part
A	1	Stigma
B	2	Pericarp
C	3	Radicle
D	4	Seed

78. the diagram shows some of the muscles and bones of the human arm.



When muscle X contracts, what happens to the arm and what happens to muscle Y?

	Arm	Muscle y
A	Bends	Contracts
B	Bends	Relaxes
C	Straightens	Relaxes
D	Straightens	Contracts

79. What happens to the volume of the thorax and the air pressure the lungs during breathing in?

	Volume of thorax	Air pressure in lungs
A	Decreases	Increase
B	Decreases	Remain constant
C	Increases	Increases
D	Increases	Remain constant
E	Increases	Decreases

80. Dietary fiber passes through several structures after leaving the stomach. In which order does the dietary fibre pass through these structures?

- A. duodenum → jejunum → ileum → rectum → colon
- B. ileum → duodenum → colon → jejunum → rectum
- C. ileum → duodenum → jejunum → rectum → colon
- D. colon → duodenum → ileum → rectum → jejunum
- E. duodenum → jejunum → ileum → colon → rectum

81. The scientific name of Thorn apple is:

- A. Sycopodium phlegmaria
- B. Anthoceros fusiformis
- C. "Ginkgo biloba
- D. Datura alba
- E. Agaricus bisporus



82. The following statements are about enzymes:

1. They are globular proteins.
2. They can be inhibited by competitive inhibitors.
3. They are formed in the smooth endoplasmic reticulum.
4. They are only found attached to plasma membranes in the cell.

Which statements are correct for all enzymes?

- A. 1 and 4 only
- B. 2 and 4 only
- C. 1 and 2 only
- D. 1, 2, 3 and 4

83. The diagram shows a section through the human brain.

What are some functions of the parts labelled 1, 2 and 3?

	1	2	3
A	Heart beat and blood pressure	Forms visual images	Controls digestion
B	Perception of pleasure and pain	Muscular coordination	Heart beat and blood pressure
C	Muscular coordination	Heart beat and blood pressure	Perception of pleasure and pain
D	Perception of pleasure and pain	Controls digestion	Heart beat and blood pressure
E	Muscular coordination	Perception of pleasure and pain	Heart beat and blood pressure

84. Which one of the following combinations of statements is true of saccharides in living organisms?



	They provide energy	They form storage compounds	They form supporting structure
A	No	No	Yes
B	No	No	No
C	Yes	No	No
D	Yes	Yes	No
E	Yes	Yes	Yes

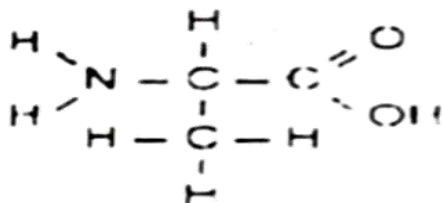
85. The table refers to blood vessels in the human body

Vessel	Blood carried		Oxygenated / deoxygenated
	From	To	
Aorta	Lungs	All organs except lungs	Oxygenated
Pulmonary vein	Aorta	heart	Q
Hepatic artery	Alimentary	R	Oxygenated
Hepatic portal vein	Canal	Liver	s

What are P, Q, R and S?

	P	Q	R	S
A	Left ventricle	Deoxygenated	Kidney	Deoxygenated
B	Left ventricle	Oxygenated	Liver	Deoxygenated
C	Right ventricle	Deoxygenated	Kidney	Oxygenated
D	Right ventricle	Oxygenated	Liver	Oxygenated

86. The diagram shows a molecule.



Educational  
Testing Service

Which substance might include the above molecule?

- A. Cellulose
- B. Serine
- C. Glucose
- D. Alanine

87. During the formation of an ovum, non-disjunction of the sex chromosomes occurred. The ovum was then fertilized by a normal, Y-bearing sperm cell. Which one of the following shows the sex chromosome complement of the resulting zygote?

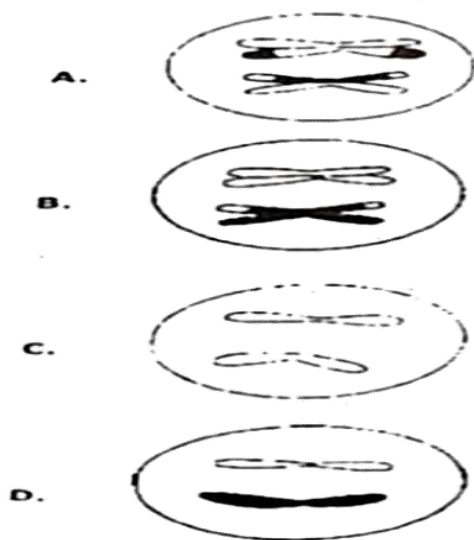
- A. Xo
- B. Xy
- C. Xxy
- D. Xxxxy
- E. Xxyy

88. The diagram shows a cell at anaphase 1 of meiosis .



which diagram shows a normal gamete that could be produced from this cell?





89. Five different amino acids (numbered 1-5 below) form the Following sequence in part of a polypeptide chain:

1- 2- 3- 4-2-5-3

Messenger RNA (mRNA) codons which correspond to these amino acids are:

amino acid 1	UGU
amino acid 2	GAU
amino acid 3	CAC
amino acid 4	UAG
amino acid. 5	AAG

Which one of the following DNA base sequences could provide the code for the given section of polypeptide?

- A. ACACTTGTGATGCTATTCGTG
- B. ACACUAGUGAUGCUAUUCGUG
- C. ACACTAGTGATGCTAAACGTG
- D. ACACTAGTGATCCTATTCGTG
- E. CACATCUTUCTUATCTTAUTU

90. The following sequence of events occurs at the neuromuscular junction.

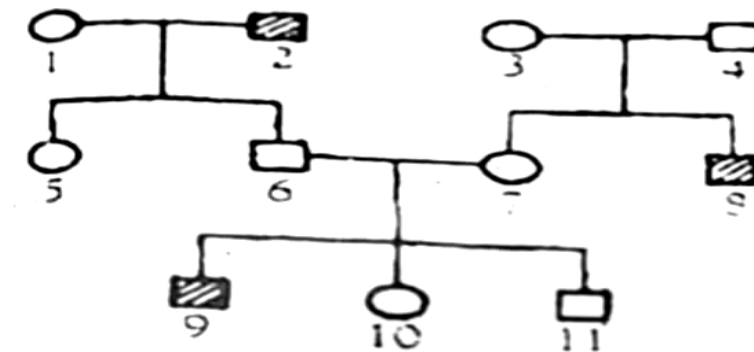
nerve impulse → release of V → end plate potential → W produced in muscle fibre --> X released from sarcoplasmic reticulum → formation of Y → muscle contraction:

Which one of the following shows the correct sequence from V →



	V	W	X	Y
A	acetylcholine	Action potential	Calcium ions	Actomyosin
B	acetylcholine	Action potential	Actomyosin	Calcium ions
C	Actomyosin	Acetylcholine	Calcium ions	Action potential
D	Calcium ions	Action potential	Acetylcholine	Actomyosin
E	Calcium ions	Actomyosin	Acetylcholine	Action potential

91. The diagram shows the inheritance of haemophilia in a FAMILY .



key to phenotypes

- normal female
- haemophiliac female
- normal male
- haemophiliac male

key to chromosome types

- $X^H$  = normal X chromosome
- $X^h$  = X chromosome carrying allele for haemophilia
- Y = normal Y chromosome

What is the genotype of person 7?

- A.  $X^H X^H$
- B.  $X^H Y$
- C.  $X^H X^h$
- D.  $X^h X^h$
- E.  $X^h X$

92. Which of the following types of cell are found in the secondary xylem of angiosperms?

- A. tracheids, parenchyma, fibres, collenchyma but no vessels
- B. vessels, tracheids, parenchyma, collenchyma but no fibres
- C. vessels, tracheids, fibres, collenchyma but no parenchyma
- D. vessels, tracheids, fibres, parenchyma but no collenchyma
- E. vessels, fibres, parenchyma, collenchyma but no tracheids

93. The floral formula of family caesalpiniaceae or casia family is:

- A.  $\oplus, \sigma, K_{(5)}, \overline{C_{(5)}}, A_5, \underline{G_{(2)}}$
- B.  $+, \sigma, K_{(5)}, C_{1+2+(2)}, A_{(9)+1}, \underline{G_1}$
- C.  $+, \sigma, K_{(5) \text{ or } 5}, C_5, A_{10}, \underline{G_1}$
- D.  $\oplus, \sigma, K_{(5)}, C_{5 \text{ or } (5)}, A_{10 \text{ or } (10)}, \underline{G_1}$
- E. None of the above

94. The following observations refer to evolution:

- I. Inherited variations which are 'favoured' in particular environment are passed on.
- II. There is a struggle for existence.
- III. In time, 'favoured' inherited variations may accumulate causing gradual changes in the organism.
- IV. Although populations tend to overproduce, they remain more or less constant in numbers from generation to generation.

In what sequence should the statements be placed to support Darwin's theory of evolution?

- A. I, II, III, IV
- B. II, I, III, IV
- C. III, I, IV, II
- D. IV, I, II, III
- E. IV, II, I, III



95. Identify the bones in which the connecting joints are freely moveable joints:

- A. Ankle
- B. Wrist
- C. Vertebrae
- D. Elbow
- E. All of the above

96. The egg of a chick is laid at which of the following stages?

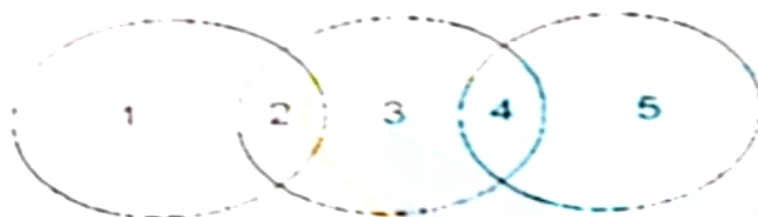
- A. gastrula
- B. Blastula
- C. cleavage
- D. Morula
- E. neurulation

97. class Elasmobranchi have an exoskeleton of:

- A. placoid scales
- B. cycloid scales
- C. ctenoid scales
- D. epidermal scales



98. The diagram shows some similarities between golgi apparatus, mitochondria and suicide sacs.



	1	2	3	4	5
A	Golgi apparatus	enzymes	mitochondria	Membrane bond	Suicide sacs
B	Golgi apparatus	Enzymes	Mitochondria	Membrane bond	Suicide sacs
C	Suicide sacs	Non Membrane bond	Golgi apparatus	Enzymes	mitochondria
D	Suicide sacs	Membrane bond	mitochondria	Membrane bond	Golgi apparatus

99. An example of passive acquired immunity is:

- A. vaccination against smallpox
- B. use of polio vaccine passing
- C. of certain antibodies to the fetus by the pregnant woman
- D. inoculation of antitoxin in case of a puncture wound
- E both C & D

100. Four words are shown below:

**facultative   obligate   saprophytes   parasites**

**These words can be used in the spaces P, Q, R and S to complete the sentence below.**

Among heterotrophic plants those which depend on living plants and animals for their nutritional requirements are known as ...P... Parasites which depend for their nutrition entirely on other living organisms are known as ...Q... or total parasites and those which depend for these requirements partially on other living organisms are called ...R... or partial parasites. On the other hand, the plants which depend on dead or rotten organic remains of plants and animals are called ...S....

	Obligate	Parasites	Saprophytes	Facultative
A	P	Q	R	S
B	Q	P	S	R
C	R	S	Q	P
D	S	R	Q	P



## NTS TESTING SERVICE NTS ANSWER KEY 2015



Question#	Correct Choice	Question#	Correct Choice	Question#	Correct Choice	Question#	Correct Choice
1	E	26	B	51	E	76	D
2	B	27	E	52	A	77	B
3	C	28	D	53	C	78	C
4	B	29	B	54	A	79	E
5	C	30	B	55	C	80	E
6	C	31	E	56	B	81	D
7	A	32	Cancel	57	B	82	C
8	E	33	B	58	D	83	B
9	A	34	B	59	D	84	E
10	D	35	A	60	B	85	B
11	D	36	C	61	D	86	D
12	D	37	B	62	D	87	C
13	A	38	D	63	Cancel	88	D
14	E	39	Cancel	64	E	89	D
15	E	40	A	65	A	90	A
16	A	41	Cancel	66	A	91	C
17	C	42	D	67	B	92	D
18	B	43	C	68	C	93	C
19	A	44	A	69	B	94	E
20	A	45	B	70	E	95	E
21	B	46	A	71	A	96	B
22	A	47	C	72	C	97	A
23	B	48	C	73	B	98	D
24	A	49	A	74	A	99	E
25	B	50	D	75	A	100	B



# Past Paper 2016

# NATIONAL TESTING SERVICE

## NTS past paper 2016

### ENGLISH

Complete the sentences by choosing the most appropriate option from the given lettered choices (A to D/E) below each.

1. The examination will \_\_\_\_\_ in ten minutes time.

- A. finish
- B. finished
- C. Shall finish
- D. had finish

2. I forgot \_\_\_\_\_ take down his telephone number.

- A. too
- B. to
- C. on
- D. of
- E. in



Identify the word or phrase that **needs to be changed** for the sentence to be correct:

3. The last bus leave in five minutes, and the trams stop running

A B C D

too. No error  
E

4. Some people have successfully taken up painting quite late in life.

A B C D

No error.  
E

Choose the word most similar in meaning to the capitalized one.

5. **WORTH:**

- A. value
- B. dearth
- C. weakness
- D. burden



6. **ANCIENT:**

- A. modern
- B. old
- C. current
- D. vacant

**Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters.**

7. **FORTUNE:**

- A. luck
- B. capital
- C. bad luck
- D. wealth

8. **INITIATE:**

- A. start
- B. finish
- C. originate
- D. collapse



**Read the passage to answer questions 9-10**

If a writer has a point of view on some such subject as religion, politics or history, and wishes to persuade readers to accept his point of view, he is not likely to state his point of view tersely and leave it at that. He will bring forward the evidence that supports his point of view. He will argue from that evidence to his conclusions. Like a lawyer he may call evidence from different sources, all in support of his main case. Some parts of his evidence and argument may be less important than others and may be discarded altogether in a summary or presented in less detail. A writer whose aim is to persuade is likely to repeat some of the assertions of key importance to his argument so that the reader may not forget them, but in a summary once a thing is said it need not be said again. The writer of a summary must first of all be absolutely certain what case the writer of the original passage is making - what set of facts or opinions he is trying to establish - and the summary must convey the real message of the passage fully and clearly. Important statements essential to the writer's argument must be preserved.

**9. If someone wants to persuade his readers to his point of view on subjects like religion, politics or history then he has to:**

- A. simply state his point of view tersely
- B. provide evidences for his conclusions
- C. he has to forcefully implement his beliefs
- D. he has to provide only the summary



**Educational  
Testing Service**

**10. A summary writer:**

- A. needs to explain things again and again
- B. must write every important or less important information equally
- C. must convey the real message of the passage fully and clearly
- D. needs to give his own arguments & views in summary .

**PHYSICS**

11. If vector  $\vec{A}$  is perpendicular to vector  $\vec{B}$  i.e.  $\theta = 90^\circ$ , or one of the two vectors is a null vector then  $\vec{A} \cdot \vec{B} = ?$

- A. 0
- B. 30
- C. 45
- D. 90
- E. 180



12. An orange is dropped from the top of a tower. If it takes 10 seconds to hit the ground, find the height of the tower? ( $g = 9.8 \text{ m/s}^2$ )

- A. 280 meters
- B. 310 meters
- C. 390 meters
- D. 490 meters
- E. 510 meters

13. A vehicle travelling at a constant speed of 60 km/h rounds a curve of radius 100 m, find its acceleration?

- A.  $1.777 \text{ m/s}^2$
- B.  $2.777 \text{ m/s}^2$
- C.  $3.777 \text{ m/s}^2$
- D.  $4.777 \text{ m/s}^2$
- E.  $5.777 \text{ m/s}^2$



14. An 80 kg man runs up a hill through a height of 4 m in 3 seconds. How much work does he do against gravitational forces? ( $g = 9.8 \text{ m/s}^2$ ).

- A. 2136 J
- B. 3136 J
- C. 4136 J
- D. 5136 J
- E. 6136 J

15. A body with a mass of 0.2 kg is attached to a spring and placed on a horizontal frictionless table. The string is stretched 30 cm, when a force of 6 N is applied. What is its spring constant?

- A. 5 N/m
- B. 10 N/m
- C. 15 N/m
- D. 20 N/m
- E. 25 N/m



16. Identify the technical and scientific application/s of polarization of light in our daily life:

- I. The determination of the concentration of optically active substance such as sugar.
- II. In photography, to enhance the effect of sky and clouds.
- III. It is used in photography under water.

- A. I only
- B. II only
- C. III only
- D. I and II
- E. I, II and III

17. What will be the magnification of the lens, when an object is placed at a distance of 60 cm from a concave lens of focal length 30 cm ?

- A. 1/3
- B. 1/5
- C. 1/7
- D. 1/9
- E. 1/11

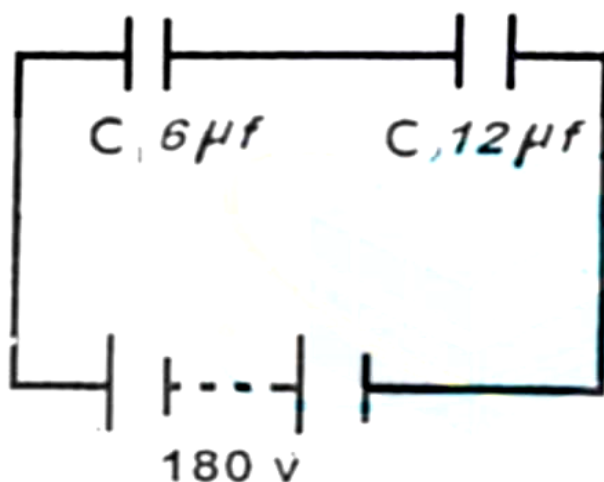
18. What is the volume occupied by a gram-mole of a gas at 0°C pressure of one atmosphere? ( $R=8.314 \text{ J/mole.K}$ )

- A. 12.4 liters/mole
- B. 14.4 liters/mole
- C. 16.4 liters/mole
- D. 18.4 liters/mole
- E. 22.4 liters/mole

19. An object is lifted 5 m above leveled ground, mass of object is 20 kg and acceleration due to gravity is  $10 \text{ N kg}$ , potential energy of the object is:

- A. 400 J
- B. 1000 J
- C. 2.5 J
- D. 0.4 J

20. Two capacitors  $C_1$  ( $6\mu\text{f}$ ) and  $C_2$  ( $12\mu\text{F}$ ) are in series connected across a 180 volts d.c. supply. Calculate the charges on  $C_1$  and  $C_2$  respectively,



- A.  $120 \times 10^{-6} \text{ C}$ ,  $420 \times 10^{-6} \text{ C}$
- B.  $320 \times 10^{-6} \text{ C}$ ,  $420 \times 10^{-6} \text{ C}$
- C.  $420 \times 10^{-6} \text{ C}$ ,  $320 \times 10^{-6} \text{ C}$
- D.  $720 \times 10^{-6} \text{ C}$ ,  $720 \times 10^{-6} \text{ C}$
- E.  $820 \times 10^{-6} \text{ C}$ ,  $420 \times 10^{-6} \text{ C}$

21. The units of length, time and mass in SI units are the same as the units of these quantiles in \_\_\_\_\_.

- A. MKS system
- B. CGS system
- C. ft-lb system
- D. Both B and C

22. Three words are shown below:

non-zero

Isobarle

Isobarically

These words can be used in the spaces P, Q and R to complete the sentences below.

\_\_\_\_\_ P \_\_\_\_\_ Process is that process which takes place at constant pressure. In such a process the heat transferred and the work are both \_\_\_\_\_ Q \_\_\_\_\_ When water enters the boiler of a steam engine and is heated to its boiling point, vaporized and then the steam is superheated, all these processes take place \_\_\_\_\_ R \_\_\_\_\_ Such processes play an important role in mechanical engineering

	Isobaric	Non-zero	Isobarically
A	R	Q	P
B	R	P	Q
C	P	Q	R
D	Q	R	P

23. Resistance of a wire is  $R$ . If you increase the length of wire such that its length doubles. The stretched wire will have resistivity:

- A.  $R/2$
- B.  $R$
- C.  $2R$
- D.  $4R$

24. If modulated signal frequency is represented by  $f_m$  carrier frequency by  $f_c$   $f_{min}$  and  $f_{max}$  represent minimum and maximum values respectively then upper sideband refers to the range:

- A.  $f_c - f_{max}$  to  $f_c - f_{min}$
- B.  $f_c + f_{min}$  to  $f_c + f_{max}$
- C.  $f_c - f_m$
- D.  $f_m - f_c$



25. In SI system of units, the unit of power is \_\_\_\_\_.

- A. Joules
- B. Ergo
- C. Watts
- D. Watt-hours

26. If 'T' is the tension and ' $\mu$ ' the mass per unit length of the stretched wire in a sonometer, the velocity of wave produced on bringing a tuning fork near it is:

- A.  $v = \mu T$
- B.  $v = (\mu / T)^{1/2}$
- C.  $v = T / \mu$
- D.  $v = (T / \mu)^{1/2}$

27. An astronomical telescope is constructed using \_\_\_\_\_ objective lens and \_\_\_\_\_ eyepiece.

- A. Convex ... concave
- B. Convex ... convex
- C. Concave ... concave
- D. Concave ... convex



28. The relationship for X-ray diffraction in atomic layers of crystals with spacing 'd' amongst the crystal planes, is:

- A.  $m\lambda = d \sin\theta$
- B.  $2m\lambda = d \sin\theta$
- C.  $m\lambda = 2d \sin\theta$
- D.  $(2m+1)\lambda = 2d \sin\theta$

29. When interference between thin films occurs, the path difference between two interfering rays is  $2t$ . If 'n' is the refractive index of the medium, the bright circles are obtained when \_\_\_\_\_ with  $m=0, 1, 2, 3, \dots$

- A.  $2m = nt$
- B.  $m\lambda = 2nt$
- C.  $(2m+1)\lambda = 2nt$
- D.  $(2m+1)\lambda = 4nt$

30. The ground level of Hydrogen atom has energy value in eV:

- A. 13.6
- B. 1.36
- C. -1.36
- D. -13.6



31. If  $T_1$  is the temperature of the hot body and  $T_2$  is the temperature of the cold body, the efficiency of a Carnot engine is given by:

- A.  $1 - (T_1 / T_2)$
- B.  $1 - (T_2 / T_1)$
- C.  $(T_1 / T_2) - 1$
- D.  $(T_2 / T_1) - 1$

32. On Fahrenheit scale lower point is marked 32 and upper point 212. Interval between them is equally divided into \_\_\_\_\_ equal parts.

- A. 190
- B. 180
- C. 100
- D. 200

33. Radioactivity results in ionization 'in' materials. The ionizing power of \_\_\_\_\_ is highest.

- A. X rays
- B.  $\alpha$  rays
- C.  $\beta$  rays
- D.  $\gamma$  rays



34. During the process of nuclear disintegration, when beta particle emission occurs, atomic no of the atom changes by \_\_\_\_\_ and its mass number changes by \_\_\_\_\_.

- A. one unit ... one unit
- B. one unit ... no units
- C. no units ... one unit
- D. no units ... no units

35. The radio isotopes radiating Gamma rays, advisable for treatment of patients need to have \_\_\_\_\_ half-life.

- A. long
- B. short
- C. intermediate
- D. any arbitrary

36. 4 resistors of 10 Ohm each are connected in an electric circuit In series. Their combined effect is equivalent (In Ohm) to:

- A. 10
- B. 20
- C. 30
- D. 40
- E. 50

37. A steady current of 5 A is drawn from an electric source working at a voltage of 100 v. The power consumed (In Watts) is \_\_\_\_\_.

- A. 0.05
- B. 5
- C. 500
- D. 50000



38. The magnetic field of induction  $B$  is measured in the units which are equivalent to:

- A. Newton / Coulx meter / sec
- B. Newton / Ampere x meter square
- C. Newton / Ampere x meter
- D. Both A and C

39. Which of the following waves are electromagnetic waves?

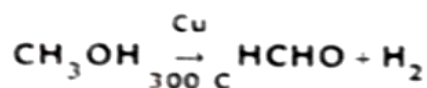
- A. X rays
- B. Beta rays
- C. Alpha rays
- D. Proton rays

40. The spectral series of Hydrogen spectra that lies in ultraviolet region is:

- A. Balmer Serles
- B. Braket Serles
- C. Lyman serles
- D. Paschon series

**CHEMISTRY**

41. 1 dm<sup>3</sup> of methyl alcohol is heated over Cu at 300°C; we get:



The volume in dm<sup>3</sup> of hydrogen gas obtained is:

- A. 0.5 dm<sup>3</sup>
- B. 1 dm<sup>3</sup>
- C. 1.5 dm<sup>3</sup>
- D. 2 dm<sup>3</sup>
- E. 2.5 dm<sup>3</sup>



42. Cathode rays:

- A. are heavy in the case of bigger atoms
- B. are light in the case of smaller atoms
- C. are more intense in the case of radioactive atoms
- D. depend on the nature of the gas
- E. are independent of the nature of the gas

43. Pauli Exclusion Principle states that no two electrons can have the entire four quantum numbers same. According to this principle which of the following pairs of atoms shows difference in their Principle Quantum Number?

- A. H & He
- B. Li & Be
- C. Na & K
- D. Na & Mg
- E. K & Ca

44. C<sub>2</sub>H<sub>5</sub>-OH boils at a higher temperature than CH<sub>3</sub>-O-CH<sub>3</sub> though both have the same molecular formula C<sub>2</sub>H<sub>6</sub>O. The reason is the alcohol has:

- A. ionic bonding
- B. covalent bonding
- C. electrovalent bonding
- D. polar bonding
- E. H-bonding

45. For a 51% ionic molecule, the difference in EN is:

- A. 1.5
- B. 1.7
- C. 1.9
- D. 2
- E. 2.1

46. At  $100^{\circ}\text{C}$ , 0.1 mole of  $\text{N}_2\text{O}_4$ , is heated in a one  $\text{dm}^3$  flask. At equilibrium concentration of  $\text{NO}_2$  was found to be 0.12 moles. Calculate  $K_c$  for the reaction.

- A. 0.12
- B. 0.36
- C. 0.21
- D. 0.012
- E. 0.02



47. In the commercial electrochemical process for aluminium extraction, the electrolyte used is:

- A.  $\text{Al}(\text{OH})_3$  in  $\text{NaOH}$  solution
- B. an aqueous solution of  $\text{Al}_2(\text{SO}_4)_3$
- C. a molten mixture of  $\text{Al}_2\text{O}_3$ , and  $\text{Na}_3\text{AlF}_6$
- D. a molten mixture of  $\text{AlO}(\text{OH})$  and  $\text{Al}(\text{OH})_3$

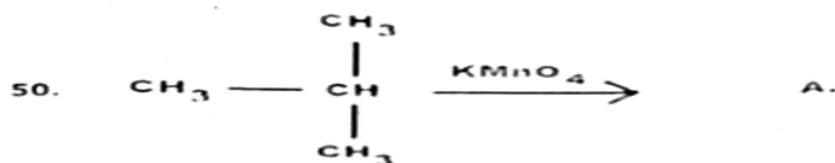
48. Balmer series is important as:

- A. it is the first series
- B. it gives sharp lines
- C. it lies in visible region
- D. it was first discovered
- E. it has minimum energy

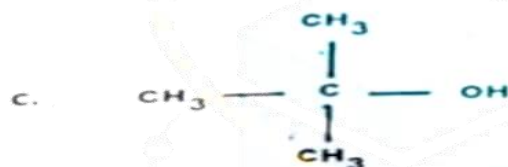
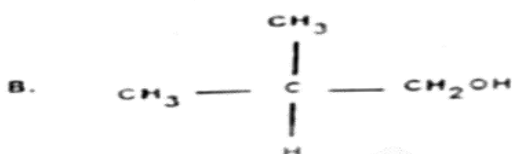
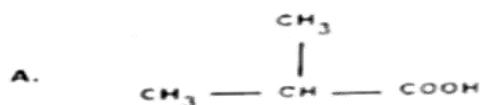
49. Which of the following compounds is expected to be coloured?

- A.  $\text{Ag}_2\text{SO}_4$
- B.  $\text{CuCl}$
- C.  $\text{MgF}_2$
- D.  $\text{CuF}_2$

50.



Where A is:



51. Mark the correct statement about hydrides of group V-A:

- A. The hydrides of Group V-A are covalent.
- B. The hydrides of Group V-A are ionic.
- C. Half of the hydrides of Group V-A are covalent half are ionic.
- D. None of the hydride of V-A are covalent.

52. Nylon 6, 6 is prepared by the condensation of:

- A. dipic acid and hexamethylene diamine
- B. Adipic acid and tetramethylene diamine
- C. Phenol and formaldehyde
- D. Diol and dicarboxylic acid

53.  $\alpha$ -amino acids are compounds having carboxylic acid as well as amino functional groups attached to:

- A. Any C-atom in the molecule
- B. Alternate carbon atoms
- C. Neighboring carbon atoms
- D. Same carbon atom

54. An Alkyl halide reacts with ammonia to yield:

- A. Amide
- B. Cyanide
- C. Amine
- D. Imine

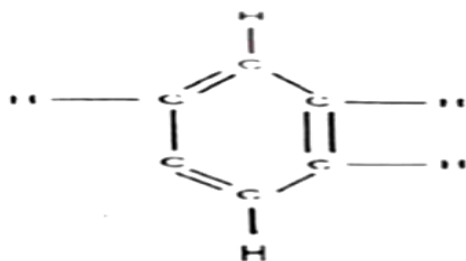
55.  $\text{S}_\text{N}^2$  reaction can be best carried out with:

- A. Primary alkyl halide
- B. Sec-alkyl halide
- C. Tert-alkyl halide
- D. All react with similar mechanism

56. The arrangement of element in the ascending order of atomic weight is made by \_\_\_\_\_.

- A. Ingold
- B. Hughies
- C. Newland
- D. J.W Dobereiner

57. Which of the following element is needed to the following element is needed to add in the given diagram to make it aromatic phenol?



- A. -H
- B. -OH
- C. -CH
- D. -H<sub>2</sub>

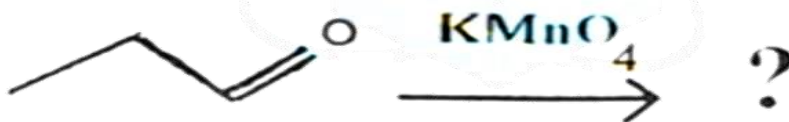


58. Four words are shown below:

similar polar solvents   electrostatic   Solvation   Lattice energy  
 Ionic compounds are soluble in water and P because of the strong Q attractions between the ions and polar molecules of solvent. The surrounding of the ions by the solvent molecules R releases the energy which is known as the energy of solvation. This energy usually overcomes the high S of the ionic compound.

	Lattice energy	Similar polar solvents	Electrostatic	Solvation
A.	S	Q	R	P
B.	P	Q	S	R
C.	S	P	Q	R
D.	R	S	P	Q
E.	P	Q	R	S

59. What is the product of the below reaction?



- A.  $\text{C}_3\text{H}_7\text{OH}$   
 B.  $\text{C}_2\text{H}_5\text{COOH}$   
 C.  $\text{C}_3\text{H}_7\text{CHO}$   
 D.  $\text{CH}_3\text{COOH}$



60. The IUPAC name for the structure below ends with what suffix?

- A. -ol  
 B. -ide  
 C. -oic acid  
 D. -yne



61. The term  $+d_x/dt$  in the rate expression refers to the:

- A. Decrease in concentration of the reactant x
- B. Instantaneous rate of the reaction
- C. Increase in concentration of the reactant x
- D. Increase in solubility of the reactants

62. In which of the following reactions  $K_p > K_c$  ?

- A.  $2SO_2 + O_2 \rightleftharpoons 2SO_3$
- B.  $N_2 + 3H_2 \rightleftharpoons 2NH_3$
- C.  $PCl_5 \rightleftharpoons PCl_3 + Cl_2$
- D.  $N_2 + O_2 \rightleftharpoons 2NO$
- E. Both c and d

63. Meta directing group is:

- A. -OH
- B. -OR
- C. -COR
- D. -NHR



64. A sample of ideal gas has a volume of 128 ml at  $-27^\circ\text{C}$  to what temperature must the gas be heated at constant pressure if final volume is to be 214 ml?

- A.  $120^\circ\text{C}$
- B.  $130^\circ\text{C}$
- B.  $138^\circ\text{C}$
- D.  $140^\circ\text{C}$
- E.  $150^\circ\text{C}$

65. 6,7-dimethyl-9-D-Pribitylosoalloxazine is the IUPAC name of:

- A. Nicotinic acid
- B. Riboflavin
- C. Thiamine
- D. Antirachitic
- E. Tocopherol

66. Fuming sulphuric acid contains:

- A.  $SO_4$
- B.  $SO_3$
- C.  $S_3O_3$
- D.  $S_2O_3$
- E.  $SO_2$

67. The principle quantum number is related to the:

- A. Orbital angular momentum
- B. Size of the orbital
- C. Orientation of the orbital
- D. Spin of orbital

68. Geometrical isomerism in alkenes is due to:

- A. Restricted rotation about C = C bond
- B. Free rotation about C = C bond
- C. Optical rotation about C = C bond
- D. Oscillation of H-atom between two polyvalent atoms

69. Trend of ionization energy in a group from top to bottom is:

- A. increases
- B. decreases
- C. remain same
- D. increases then decreases
- E. constant

70. The catalyst used in Friedel Craft reaction is:

- A.  $\text{FeCl}_3$
- B. PVC
- C. Pt / Pd / Ni
- D.  $\text{AlCl}_3$



**BIOLOGY**

71. All of the following are correct regarding parenchyma tissue EXCEPT:

- A. They are found in the epidermis, pith and cortex
- B. The whole body of Bryophytes is made up of these tissues
- C. They are loosely packed with intercellular spaces in leaves
- D. They are of two types namely fibers and sclereids

72. The lower two pairs of ribs are

- A. True ribs
- B. False ribs
- C. Floating ribs
- D. Articulated ribs



73. Genetically isolated unit of population is known as:

- A. Deme
- B. Gene
- C. Biom
- D. Specie

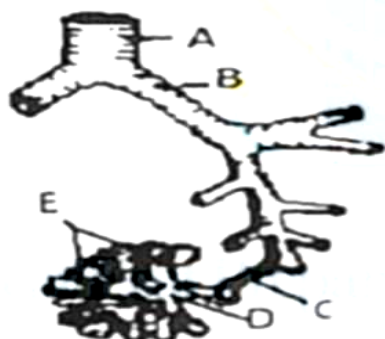
74. Micronutrient in abiotic components, is \_\_\_\_\_.

- A. Carbon
- B. Hydrogen
- C. Potsassium
- D. Iron
- E. All of the above

78. Which of the following processes occur in the vascular tissue in leaves and in roots?

	In Leaves	In roots
A	Sucrose enters phloem and is polymerized to starch	Water passes from phloem to xylem by osmosis
B	Sucrose enters phloem by active transport and the water potential become more negative.	Root pressure & transpiration pull are responsible for ascent of sap.
C	Water passes from phloem to xylem by osmosis making the phloem water potential less negative	Active transport of water into xylem makes the water potential more negative.
D	Water passes out of and phloem and is lost through transpiration	Active transport of salts into the pericycle make the water potential there high

79. In the diagram showing the bronchial tree given below, parts have been indicated by alphabets. Choose the answer in which the alphabets correctly match with the parts they indicate.



- A. A=trachea, B=bronchus, C= respiratory bronchiole, D=alveolar duct, E=alveoli.  
 B. A=trachea, B=bronchus, C=alveolar duct, D=respiratory bronchiole, E=atrium.  
 C. A=bronchus, B= alveolar duct, C=respiratory bronchiole, D= trachea, E=alveoli  
 D. A = trachea, B=alveolar duct, C=respiratory bronchiole, D-bronchus, E=alveoli

80. Match the hormones listed under Column I with the roles given under Column II. Choose the answer which gives the correct combination of the alphabets of the two columns

	Column I (Hormones)		Column II (Roles)
A	FSH	P	Preparation of endometrium for implantation
B	LH	Q	Female secondary sexual characters
C	Progesterone	R	Contraction of uterine muscles
D	Estrogen	S	Development of corpus luteum
E		T	Maturation of follicle

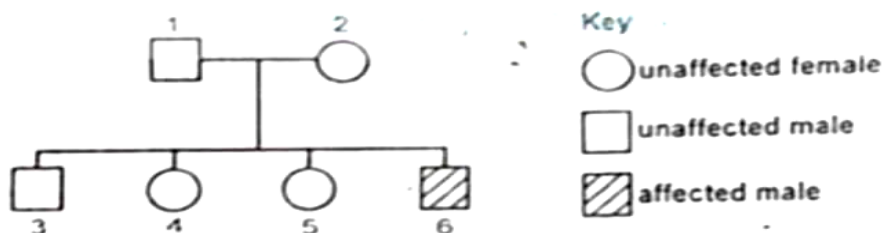
- A. A-t; B=s; C=p; D=q  
 B. A=r; B=t; C=s; D=q  
 C. A=t; B=p; C=s; D=q  
 D. A=q; B=s; C=p; D=r



81. Sickle cell haemoglobin differs from normal haemoglobin because of a single change in an amino acid; Valine replaces glutamic acid. Coding triplets in DNA for glutamic acid are CTT and CGT. Coding triplets in DNA for valine are CAA and CAG. Which mRNA codon would produce sickle cell hemoglobin if substituted for the normal mRNA codon?

- A. GAA  
 B. GTC  
 C. GTT  
 D. GUC

82. The diagram shows the inheritance of haemophilia in a family:



If daughter 4 married a normal male, what is the probability that their first child would suffer from haemophilia?

- A. 0  
 B. 0.125  
 C. 0.25  
 D. 0.5

83. The below given are the characteristics of which of the following ecosystem?

- I. Includes tropical grasslands
- II. Rainfall is upto 125cm per year
- III. Dry season is very long
- IV. Primary consumers include Zebras, giraffes and elephant etc
- V. Euphorbia is an example of its plant life

- A. Tropical rain forests
- B. Coniferous forests
- C. Savannah
- D. Tundra



84. Enzyme carbonic anhydrase in RBCs help in \_\_\_\_\_ transportation.

- A. Oxygen
- B. Iron
- C. Calcium
- D. Carbon dioxide

85. The tendency of a solution to take up water when separated from pure water by a selectively permeable membrane is called.

- A. Osmotic pressure
- B. Turgor potential
- C. Diffusion pressure deficit
- D. Water potential

86. Cranium (a part of the skull) forms the brain box and consist of bones.

- A. 10
- B. 08
- C. 05
- D. 03

87. Which of the followings is the fungal disease?

- A. Pneumonia
- B. Tinea corporis
- C. Taeniasis
- D. Amebiasis



88. Ribose and ribulose are the example of \_\_\_\_\_ class

- A. Triose
- B. Tetrose
- C. Pentose
- D. Hexose

89. which method of gaining immunity can be described as natural active immunity?

- A. Feeding on colostrum
- B. Inhaling the chicken pox virus
- C. Injection with antibodies.
- D. Through the placenta

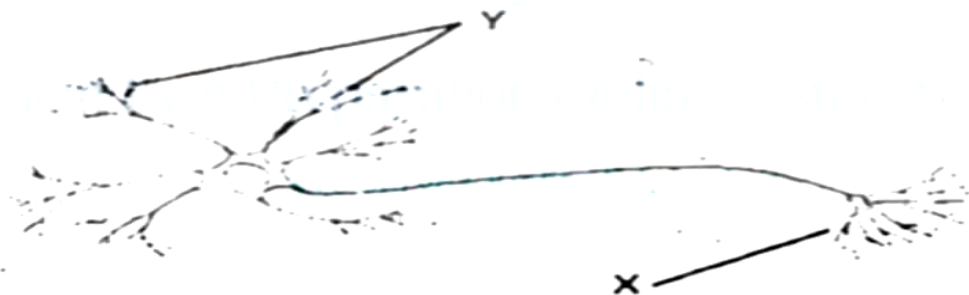


**Educational  
Testing Service**

90. During ventricular systole:

- A. Oxygenated blood is pumped into the aorta and deoxygenated blood is pumped into the pulmonary vein
- B. Oxygenated blood is pumped into the pulmonary artery and deoxygenated blood is pumped into the aorta
- C. Oxygenated blood is pumped into the aorta and deoxygenated blood is pumped into the pulmonary artery.
- D. Oxygenated blood is pumped into the pulmonary artery and deoxygenated blood is pumped into the pulmonary vein.

91. The diagram shows a neurone.



Which of the given structures could be found at X and Y?

	X	Y
A	Brain	Intestine
B	Brain	Leg
C	Eye	Hand
D	Skin	Spinal Cord



92. Which of the following contains enzymes for the detoxification of alcohol?

- A. Ribosomes
- B. Peroxisomes
- C. Glyoxysomes
- D. Lysosomas

93. An Inter-breeding population of finches became separated geographically, forming two isolated groups. Each group became subject to different selective pressures. on group was introduced into the habitat of the other. Which one of the following would determine whether they now formed two distinct species?

- A. They had been separated for more than three million years.
- B. They failed to produce fertile F<sub>1</sub> hybrids.
- C. They showed marked differences in the shape of their beaks
- D. Their plumage had become markedly different.
- E. Several genes now possessed different base sequences.

94. Four tubes were set up under certain conditions as a shown in the table.

Tubes	Conditions	Contents
1	Oxygen deficit	Pyruvate + yeast
2	Oxygen rich	Glucose + facultative aerobes
3	Oxygen rich	Glucose + an animal cell containing mitochondria
4	Oxygen deficit	Pyruvate + obligate aerobes

After Incubation, each sample was analysed to determine the presence of carbon dioxide and lactate.

In which tubes is lactate most likely to be present?

- A. 1 and 2 only
- B. 2, 3, and 4 only
- C. 1 and 4 only
- D. 1, 2 and 3 only



95. Which of the following statements describe sliding joints?

- I. These joints allow bone to slide over another bone to make movement in many directions
- II. Vertebrae are linked by sliding joints
- III. These joints don't allow the joining bones to move
- IV. Bones of ankle or wrist are connected by sliding joints

- A. I only
- B. I & II only
- C. I & III only
- D. I & IV only
- E. I, II, III & IV



96. The components of feedback mechanism are \_\_\_\_\_.

- A. Receptors, Insulators, Effectors
- B. Receptors, Suppressors, Effectors
- C. Receptors, Control centre, Effectors
- D. Receptors, Depressors, Effectors

97. Which of the following processes occur by mitosis?

- I. cloning of plasma cells
- II. gamete production
- III. replacing damaged cells

- A. II only
- B. III only
- C. I and III only
- D. I, II and III

98. Plasmodium belongs to class \_\_\_\_\_.

- A. Flagellate
- B. Sarcodina
- C. Sporozoa
- D. Ciliate

**99. Pistil is the part of:**

- A. Sepal
- B. Petal
- C. Stamen
- D. Carpel



**Educational  
Testing Service**

**100. Group Deuterostomata includes phylum:**

- A. Chordata
- B. Annelida
- C. Arthropoda
- D. Echinodermata
- E. Both A and D

# National Testing Service Past Papers

## NTS TESTING SERVICE NTS ANSWER KEY 2016



Question	Correct Choice	Question#	Correct Choice	Question#	Correct Choice	Question#	Correct Choice
1	A	26	D	51	A	76	C
2	B	27	B	52	A	77	D
3	B	28	C	53	D	78	B
4	E	29	D	54	C	79	A
5	A	30	D	55	A	80	A
6	B	31	B	56	C	81	D
7	C	32	B	57	B	82	B
8	B	33	B	58	C	83	C
9	B	34	B	59	B	84	D
10	C	35	B	60	C	85	A
11	A	36	D	61	+1 mark	86	B
12	D	37	C	62	C	87	B
13	B	38	D	63	C	88	C
14	B	39	A	64	C	89	B
15	D	40	C	65	B	90	C
16	D	41	B	66	B	91	D
17	A	42	E	67	B	92	B
18	E	43	C	68	A	93	B
19	B	44	E	69	B	94	C
20	D	45	B	70	D	95	D
21	A	46	B	71	D	96	C
22	C	47	C	72	C	97	C
23	C	48	C	73	A	98	C
24	B	49	D	74	D	99	D
25	C	50	C	75	+1 mark	100	E



Past Paper 2017

# NATIONAL TESTING SERVICE

**ENGLISH**

Complete the sentences by choosing the most appropriate option, from the given lettered choices (A to D) below each.

1. Some people \_\_\_\_\_ claim to be vegetarians actually allow themselves to eat fish and chicken.

- A. which  
B. whom  
C. who  
D. why

2. There \_\_\_\_\_ many students waiting to hear the results of the test.

- A. has  
B. have  
C. was  
D. are



## Educational Testing Service

Identify the word or phrase that needs to be changed for the sentence to be correct:

3. Because of their identical appearance and dress, the twins were  
 A B C D  
 often mistaken for each other. No error

- en mistaken for each other. No error

4. During the day, there is often two guards at the entrance. No error
- A                      B                      C                      D                      E

- A**                      **B**                      **C**                      **D**                      **E**

Choose the word most similar in meaning to the capitalized one.

- 5. THREATENING:**

- A. flighty  
B. aggressive  
C. chaste  
D. hallowed  
E. global

**S-17-3353-SMU-GREEN-221017**

1



**6. PROVOKE:**

- A. deface
- B. lionize
- C. remove
- D. punish
- E. aggravate

Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters.

**7. HONESTY:**

- A. clever
- B. dishonesty
- C. resolution
- D. failure

**8. MANDATORY:**

- A. dispassionate
- B. obligatory
- C. voluntary
- D. confirmed
- E. unhappy



Read the passage to answer questions 9-10

Due to the extremely hot weather, the electric company is planning to turn off power in certain districts during the day. This will reduce the total demand for electricity and prevent a city-wide shutdown of electrical services. Power will not be out longer than two hours in your area. For further information, please visit our Web site at [www dot electricity dot com](http://www.electricity.com). All areas affected by the shutdown are listed there, as well as the times that the power will be turned off in each area.

**9. Why is power being turned off?**

- A. To reduce total demand.
- B. To save money.
- C. To make it cooler.
- D. To make the city pay its bill.

**10. How long will power be off?**

- A. Longer than two hours.
- B. Less than two hours.
- C. For one day.
- D. Until the weather changes.



## PHYSICS

11. A fixed mass of an ideal gas absorbs 1000 J of heat and expands under a constant pressure of 20 kPa from a volume of  $25 \times 10^{-3} \text{ m}^3$  to a volume of  $50 \times 10^{-3} \text{ m}^3$ . What is the change in internal energy of the gas?

- A. -1000 J
- B. -900 J
- C. Zero
- D. +500 J
- E. +1000 J

12. In an experiment, an object was placed on the principal axis of a convex lens 25 centimeters away from the lens. A real image 4 times the size of the object was obtained. The focal length of the lens is:

- A. 20 cm
- B. 25 cm
- C. 33 cm
- D. 50 cm
- E. 100 cm



13. An object with constant mass rests on a horizontal surface whose coefficient of friction is 0.2. If a horizontal force  $F$  is applied to the object, what will be the effect(s) on the object?

- I. It may move with constant speed in the direction of  $F$  once it has been set in motion.
  - II. It may remain at rest.
  - III. It may accelerate.
  - IV. It may move with constant speed in a direction opposite to  $F$ .
- A. I, II and III only
  - B. I and III only
  - C. II and IV only
  - D. IV only
  - E. III only

14. A person having a mass of 60 kilograms exerts a horizontal force of 200 newtons in pushing a 90 kilogram object a distance of 6 meters along a horizontal floor. He does this at constant velocity in 3 seconds. The weight of this person is approximately, in newtons: ( $g = 9.8 \text{ m/s}^2$ )

- A. 40
- B. 90
- C. 200
- D. 400
- E. 600

15. If  $500 \text{ cm}^3$  of gas, having a pressure of 760 millimeters of mercury, is compressed into a volume of  $300 \text{ cm}^3$ , the temperature remaining constant, the pressure of the gas will be, in millimeters of mercury, approximately:

- A. 500
- B. 900
- C. 1,100
- D. 1,270
- E. 1,500



16. Two springs fixed at one end are stretched by 5 cm and 10 cm, respectively, when masses 0.5 kg and 1 kg are suspended at their lower ends. When displaced slightly from their mean positions and released, they will oscillate with time periods in the ratio:

- A.  $1 : \sqrt{2}$
- B. 1:2
- C.  $\sqrt{2} : 1$
- D. 2:1
- E.  $2 : \sqrt{2}$

17. A unit \_\_\_\_\_ of induction is said to exist at a point where the force per unit charge experienced by a positive test charge, moving with a velocity of  $1 \text{ ms}^{-1}$  in the direction perpendicular to the field is 1 Newton.

- A. Gravitational Field
- B. Magnetic Field
- C. Magnetic Flux
- D. Flux density

18. A \_\_\_\_\_ is a positively charged particle with properties similar to the  $\alpha$ -particle. Its mass is one fourth and charge is one half of that of an  $\alpha$ -particle. It is smaller in size and carries less energy at the same velocity.

- A. Beta particle
- B. Gamma ray
- C. Neutron
- D. Proton

19. \_\_\_\_\_ is defined as the sensation that sound produces in the ear of a listener and is clearly related to the frequency of sound. Frequency and \_\_\_\_\_ are both measured in Hertz (Hz). Thus greater the frequency the greater the \_\_\_\_\_ and lower the frequency lower the \_\_\_\_\_.

- A. Quality ... Pitch ... Loudness ... Pitch
- B. Pitch ... Pitch ... Pitch ... Pitch
- C. Loudness ... Quality ... Pitch ... Quality
- D. Quality ... Quality ... Quality ... Quality
- E. Loudness ... Loudness ... Loudness ... Loudness

20. Light can be polarized by:

- I. reflection
- II. double refraction
- III. scattering of light

- A. I only
- B. II only
- C. III only
- D. I and II only
- E. I, II and III



21. Incident rays of light parallel to the principal axis of a convex lens, after refraction by the lens, will:

- A. converge at the principal focus
- B. converge inside the principal focus
- C. converge outside the principal focus
- D. converge at the center of curvature
- E. diverge as long as they are close to the lens

22. If two sounds have the same wavelength in air at the same temperature, what other property must they also have in common?

- I. Intensity
- II. Amplitude
- III. Frequency

- A. I only
- B. III only
- C. I and II only
- D. II and III only
- E. I, II and III

23. Which unit expresses work per unit charge?

- A. Hertz
- B. Watt
- C. Joule
- D. Volt
- E. Half-life

24. The time of one vibration of a simple pendulum may be decreased by:

- A. increasing the length of the pendulum
- B. decreasing the length of the pendulum
- C. using a heavier bob
- D. using a lighter bob

25. The sum of all forms of molecular energies in a thermodynamic system is known as:

- A. Entropy
- B. Enthalpy
- C. Internal energy
- D. Red shift



Educational  
Testing Service

26. \_\_\_\_\_ is also known as anti-electron

- A. Photon
- B. Proton
- C. Positron
- D. Nucleon

27. When describing the isotopes of the same element, the most accurate statement is that they have:

- A. the same spin
- B. the same atomic mass but different atomic numbers
- C. the same atomic number but different atomic masses
- D. the same chemical properties and therefore can not be separated
- E. a coexistence limit, that is, no element can have more than three isotopes

28. In Nuclear reactions, we have the conservation of:

- A. Mass only
- B. Energy only
- C. Momentum only
- D. Mass, energy and momentum

S-17-3353-SMU-GREEN-221017

6



29. The lightest element which exhibits radioactivity is:

- A. Hydrogen
- B. Deuteron
- C. Tritium
- D. Helium

30. Nucleus with an excess of neutrons may decay radioactivity with the emission of:

- A. a neutron
- B. a proton
- C. an electron
- D. a positron

31. Which pair includes a vector quantity and a scalar quantity respectively?

- A. Power, speed
- B. Work, potential energy
- C. Displacement, acceleration
- D. Force, kinetic energy

32. A ball falls vertically and bounces on the ground. The following statements are about the forces acting while the ball is in contact with the ground. Which statement is correct?

- A. The force that the ball exerts on the ground is always equal to the weight of the ball.
- B. The force that the ball exerts on the ground is always equal in magnitude and opposite in direction to the force the ground exerts on the ball.
- C. The force that the ball exerts on the ground is always greater than the weight of the ball.
- D. The weight of the ball is always equal and opposite to the force that the ground exerts on the ball.

33. A car is travelling with uniform acceleration along a straight road. The road has marker posts every 100 m. When the car passes one post, it has a speed of 10 m/s and when it passes the next one, its speed is 20 m/s. What is car's acceleration?

- A.  $0.67 \text{ m/s}^2$
- B.  $1.5 \text{ m/s}^2$
- C.  $2.5 \text{ m/s}^2$
- D.  $6.0 \text{ m/s}^2$



S-17-3353-SMU-GREEN-221017

7

34. A sample of an ideal gas may:

- I. expand adiabatically, or
- II. expand isothermally

The net flow of heat into the gas from the exterior is:

- A. positive in each case
- B. negative for I and positive for II
- C. positive for I and negative for II
- D. zero in each case
- E. zero in I and positive for II

35. With the usual notation, the first law of thermodynamics applied to one mole of an ideal gas can be written in the following form:

$$C_v \Delta T = \Delta Q - p \Delta V$$

In a change for which Boyle's law is obeyed, which of the following would necessarily be zero?

- A.  $\Delta Q$
- B.  $C_v$
- C.  $\Delta T$
- D.  $p$
- E.  $\Delta V$

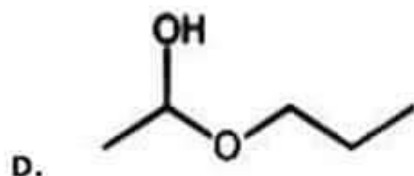
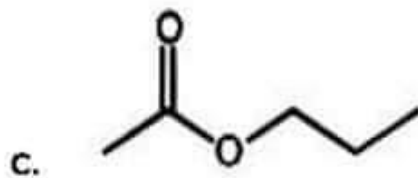
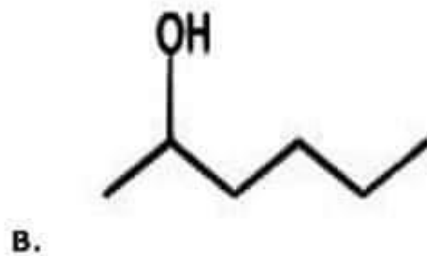
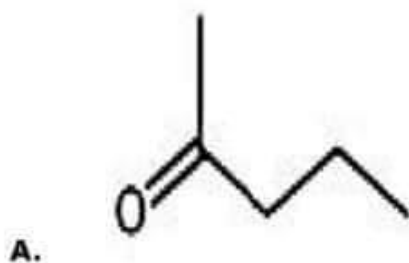
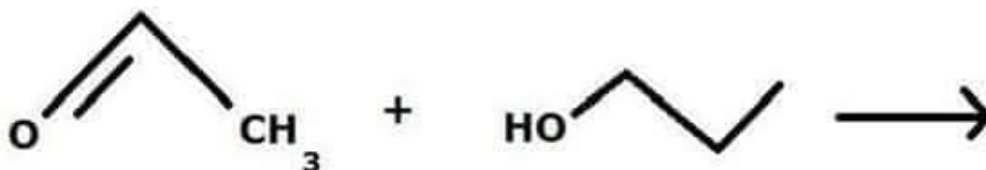
36. Four particles independently move at the same speed in a direction perpendicular to the same magnetic field. Which particle is deflected the most?

- A. a copper ion
- B. a helium nucleus
- C. an electron
- D. a proton



**CHEMISTRY**

41. What is the product of the below reaction?





40. Charges of  $+2\ \mu\text{C}$  and  $-2\ \mu\text{C}$  are situated at points P and Q respectively, as shown below. X is midway between P and Q.

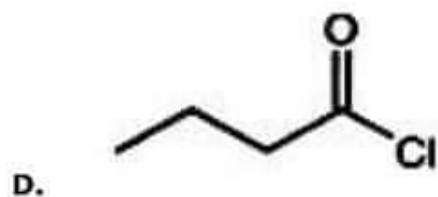
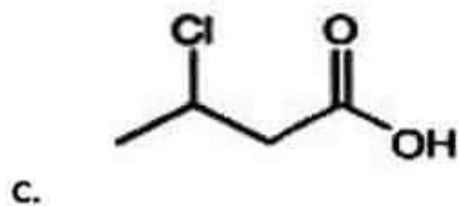
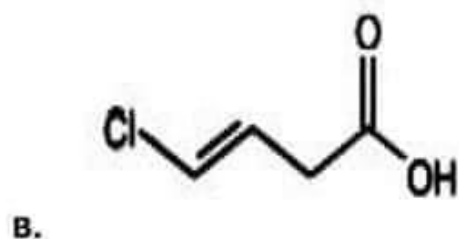
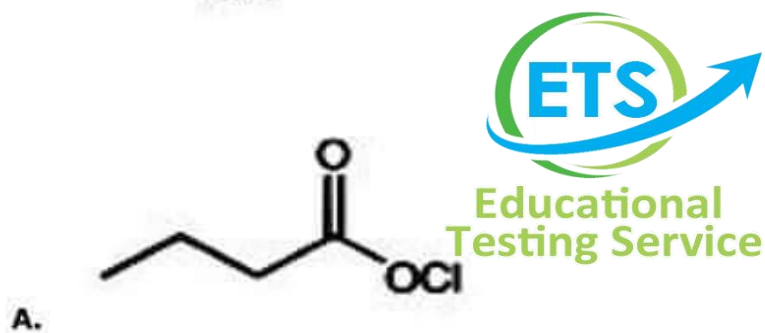
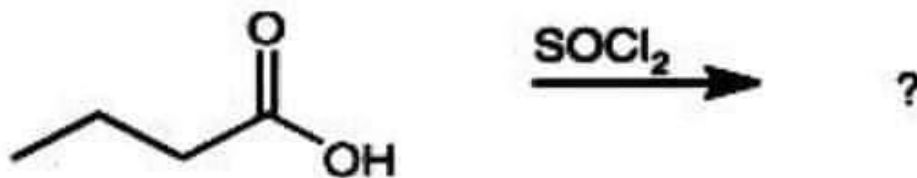


Which of the following correctly describes the electric field and the electric potential at point X?

	Electric field	Electric potential
A.	Towards Q	zero
B.	Towards Q	negative
C.	Towards P	zero
D.	Towards P	positive



42. What would be the product of the below reaction?



43. Which of the following values of heat of formation indicates that the product is least stable?

- A. -94 k cal
- B. -231 k cal
- C. +21.4 k cal
- D. +64.8 k cal

44. The enthalpy of certain reaction at 273 K is -20.75 kJ. The enthalpy of same reaction at 373 K (if heat capacities of reactants and products is same) will be:

- A. -20.75 kJ
- B. -2075 kJ
- C. Zero
- D.  $-20.75 \times \frac{373}{273}$  kJ



Educational  
Testing Service

45. Most abundant salt of sodium in nature is:

- A.  $\text{NaNO}_3$
- B.  $\text{Na}_2\text{SO}_4$
- C.  $\text{NaOH}$
- D.  $\text{NaCl}$

46. A gas that reacts with  $\text{CaO}$  and not with  $\text{NaHCO}_3$  is:

- A.  $\text{CO}_2$
- B.  $\text{Cl}_2$
- C.  $\text{O}_2$
- D.  $\text{N}_2$

47. Which of the following statements is correct?

- A.  $\text{H}_3\text{PO}_3$  is dibasic and reducing
- B.  $\text{H}_3\text{PO}_3$  is tribasic and reducing
- C.  $\text{H}_3\text{PO}_3$  is tribasic and non-reducing
- D.  $\text{H}_3\text{PO}_3$  is dibasic and non-reducing

48. Which of the following statement about  $\text{H}_2\text{S}$  is false?

- A. It is a covalent compound
- B. It is a gas with bad smell
- C. It is a stronger reducing agent than  $\text{H}_2\text{O}$
- D. It is a weak base in water

49. What is the volume in  $\text{cm}^3$  of  $3.01 \times 10^{23}$  molecules of  $\text{O}_2$  gas at S.T.P.?

- A.  $1000 \text{ cm}^3$
- B.  $11000 \text{ cm}^3$
- C.  $1120 \text{ cm}^3$
- D.  $11200 \text{ cm}^3$



50. The amount of solute present in the given amount of solvent is called:

- A. Molarity
- B. Molality
- C. Concentration
- D. Solubility

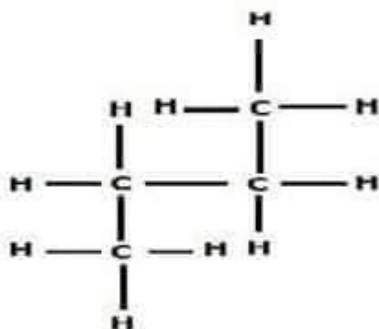
51. In the reaction  $2\text{Fe} + \text{Cl}_2 \leftrightarrow 2\text{FeCl}_3$

- A. Fe is reduced
- B. Fe is oxidized
- C.  $\text{Cl}_2$  is oxidized
- D. None of the above

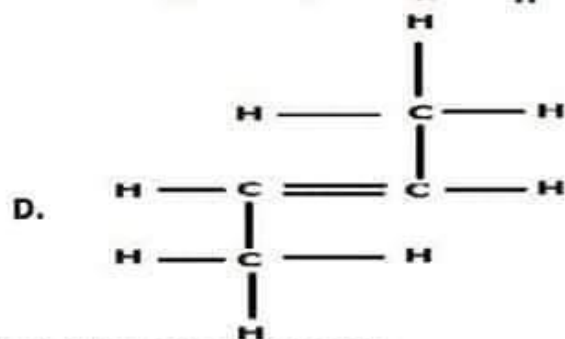
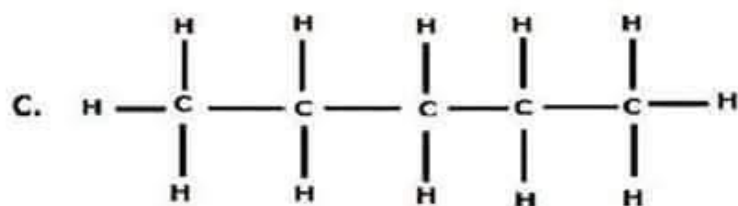
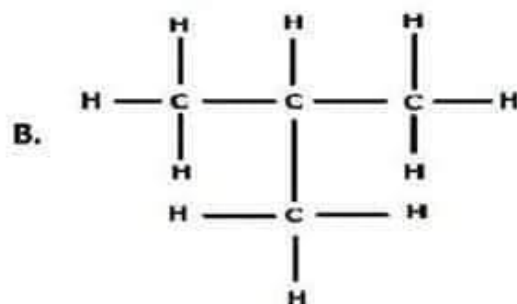
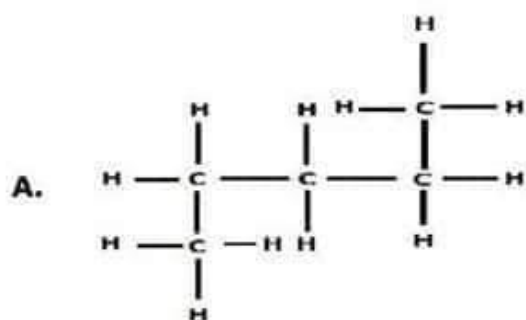
52. The process in which electric current is used to carry out a non-spontaneous redox reaction is called:

- A. Electrolyte
- B. Electrolysis
- C. Metallic conductor
- D. None of the above

53. The molecular structure of a hydrocarbon is shown below.



Which structure is an isomer of this hydrocarbon?



S-17-3353-SMU-GREEN-221017

15

54. The formula of Plaster of Paris is:

- A.  $(\text{CaSO}_4) \cdot 1/2\text{H}_2\text{O}$
- B.  $(\text{CaSO}_4) \cdot 5\text{H}_2\text{O}$
- C.  $(\text{CaSO}_4) \cdot 7\text{H}_2\text{O}$
- D.  $(\text{CaSO}_4) \cdot 9\text{H}_2\text{O}$

55. Ionic, covalent and co-ordinate covalent bonds are simultaneously present in the molecular geometry of:

- A. Ammonia
- B. Ammonium hydroxide
- C. Hydrochloric acid
- D. Water
- E. Methane



56. All amino acids contain the functional group.

- A.  $\text{NH}_2$
- B.  $\text{CO}_2\text{H}$
- C.  $\text{S}^{2-}$
- D. Both A and B

57. Alanine, lysine and tryptophane are:

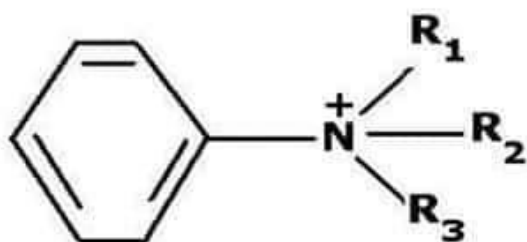
- A. Carbohydrates
- B. Lipids
- C. Enzymes
- D. Amino acids

58. What happens when one mole of ethane is mixed in the dark at room temperature with six moles of chlorine?

- A. There is no reaction.
- B.  $\text{CH}_3\text{CH}_2\text{Cl}$  and  $\text{HCl}$  are formed.
- C.  $\text{CH}_3\text{CCl}_3$  and  $\text{HCl}$  are formed.
- D.  $\text{CCl}_3\text{CCl}_3$  and  $\text{HCl}$  are formed.
- E. Carbon and  $\text{HCl}$  are formed.



59. How would an ammonium group affect on benzene ring for subsequent reactions?



- A. deactivate the ring; meta directing
- B. activate the ring, ortho-para directing
- C. deactivate the ring; ortho-para directing
- D. activate the ring; meta directing

60. Which of the following would be the best solvent for an  $S_N2$  reaction?

- A.  $H_2O$
- B.  $CH_3CH_2OH$
- C.  $CH_3SOCH_3$
- D.  $CH_3CH_2CH_2CH_2CH_2CH_3$

61. A correct formula must:

- A. be balanced with proper coefficients
- B. always have subscripts
- C. always conform to the valency rules
- D. always conforms to the law of multiple proportions

62. A compound was found to contain nitrogen and oxygen in the ratio 28 g : 80 g. The formula of the compound is:

- A. NO
- B.  $N_2O_3$
- C.  $N_2O_4$
- D.  $N_2O_5$



63. When  $\beta$ -particles are sent through a thin metal foil, most of them go straight through the foil as:

- A.  $\beta$ -particles are much heavier than electrons
- B.  $\beta$ -particles are positively charged
- C. Most part of the atom is empty space
- D.  $\beta$ -particles move with high velocity

64. Electronic Configuration of  $M^{2+}$  ion is 2, 8, 14 and its atomic weight is 56 amu. The number of neutrons in its nucleus are:

- A. 30
- B. 32
- C. 42
- D. 52



Educational  
Testing Service

65. The quantum numbers  $+1/2$  and  $-1/2$  for the electron spin represent:

- A. Rotation of the electron in clockwise and anticlockwise direction respectively
- B. Rotation of the electron in anticlockwise and clockwise direction respectively
- C. Magnetic movement of the electron pointing up and down respectively
- D. Two quantum mechanical spin states which have no classical analogue

66. 1 liter of a gas weighs 2 g at 300 K and 1 atm pressure. If the pressure is made 75 atm, at which of the following temperatures will 1 L of the same gas weigh 1 g?

- A. 450 K
- B. 800 K
- C. 600 K
- D. 900 K

67. Which of the following pairs of gases has same rate of diffusion?

- A.  $CO_2$  and  $N_2O$
- B.  $CO_2$  and  $CO$
- C.  $NO_2$  and  $CO_2$
- D.  $CO_2$  and  $N_2O_4$

68. For the equilibrium reaction  $2\text{NO}_2 \leftrightarrow \text{N}_2\text{O}_4(\text{g}) + 61\text{kJ}$ , increase of temperature would:

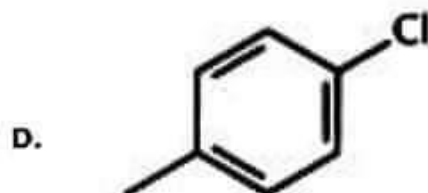
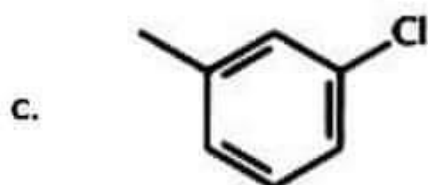
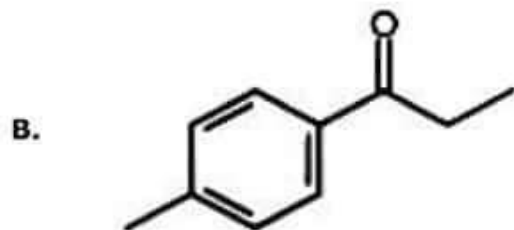
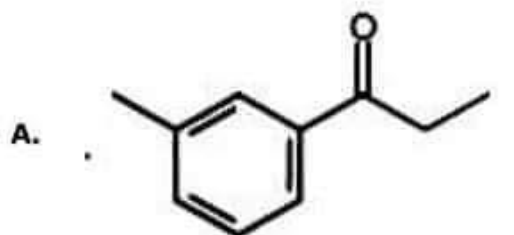
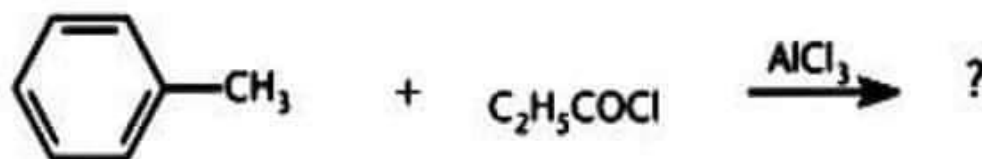
- A. Favour the formation of  $\text{N}_2\text{O}_4$
- B. Favour the decomposition of  $\text{N}_2\text{O}_4$
- C. No effect on equilibrium
- D. Stop the reaction

69. The value  $K$  for  $\text{H}_2(\text{g}) + \text{CO}_2(\text{g}) \leftrightarrow \text{H}_2\text{O}(\text{g}) + \text{CO}(\text{g})$  is 1.80 at  $1000^\circ\text{C}$ . If 1.0 mole of each  $\text{H}_2$  and  $\text{CO}_2$  are placed in 1 litre flask, the final equilibrium concentration of  $\text{CO}$  at  $1000^\circ\text{C}$  will be:

- A. 0.295 M
- B. 0.385 M
- C. 0.531 M
- D. 0.473 M



70. What would be the major product of the following reaction?



**BIOLOGY**

71. The following sequence of events occurs at the neuromuscular junction.

nerve impulse → release of V → end plate potential → W produced in muscle fibre → X released from sarcoplasmic reticulum → formation of Y → muscle contraction

Which one of the following shows the correct sequence from V - Y?

	V	W	X	Y
A	acetylcholine	action potential	calcium ions	actomyosin
B	acetylcholine	action potential	actomyosin	calcium ions
C	actomyosin	acetylcholine	calcium ions	action potential
D	calcium ions	action potential	acetylcholine	actomyosin
E	calcium ions	actomyosin	acetylcholine	action potential

72. Which group of organisms has the following features?

- I. three pairs of jointed legs
- II. three-part segmented body
- III. one pair of antennae

- A. arachnids
- B. crustaceans
- C. insects
- D. myriapods



73. The table shows some characteristics of four different vertebrates. Which vertebrate is a reptile?

	fins	legs	scales	hair
A	✓	x	✓	x
B	x	✓	✓	x
C	x	✓	x	x
D	x	✓	x	✓

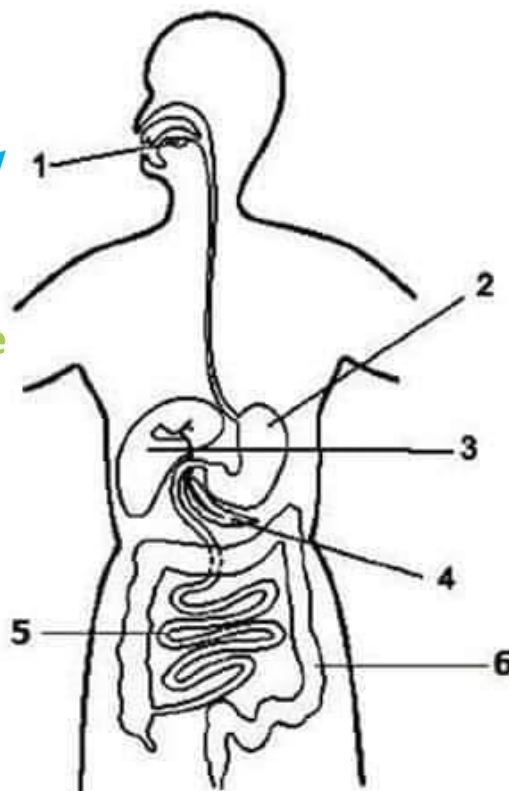
key

✓ = feature present

x = feature absent

- A. A
- B. B
- C. C
- D. D

74. The diagram shows some organs of the digestive system.



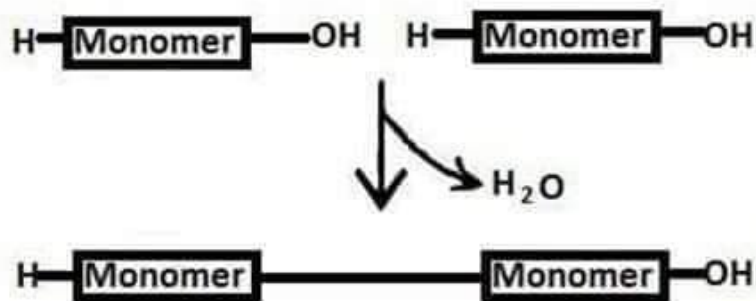
Where is amylase present?

- A. 1, 4 and 5
- B. 1, 2 and 3
- C. 2, 6 and 4
- D. 3, 5 and 4

75. Which bones meet at the elbow joint and what kind of movement do they allow?

	BONES	MOVEMENT
A.	Humerus and scapula	sliding
B.	Humerus and scapula	back and forth
C.	Ulna and humerus	sliding
D.	Ulna and humerus	back and forth





76. The above diagram represents the process of:

- A. Hydrolysis
- B. Condensation
- C. Neutralization
- D. Metabolism

77. Which of the following is correctly matched?

A	Ribosomes	f	Detoxification of alcohol
B	Lysosomes	g	Formation of astral ray
C	Centriole	h	Protein synthesis
D	Peroxisomes	i	Destroyers of foreign particles
E	Smooth ER	j	Converts cholesterol into vitamin D in skin

- A. Af, Bg, Cj, Di, Eh
- B. Ah, Bi, Df, Cg, Ej
- C. Aj, Bi, Ch, Dg, Ef
- D. Ah, Bf, Dg, Ci, Ej

78. Pyruvic acid is the end product of:

- A. Glycolysis
- B. Krebs cycle
- C. Oxidation
- D. Electron transport system

79. Humoral immunity is carried by a special group of cells called:

- A. B-cells
- B. Killer cell
- C. Helper cell
- D. Null cells

80. Identify the correctly matched pair relating to a term and its meaning/function/example:

- A. nitrogen cycle ... Rhizopus
- B. denitrifying bacteria ... change protein to ammonia
- C. biosphere ... where life exists
- D. lithosphere ... water, air and soil on the surface of earth

S-17-3353-SMU-GREEN-221017

23



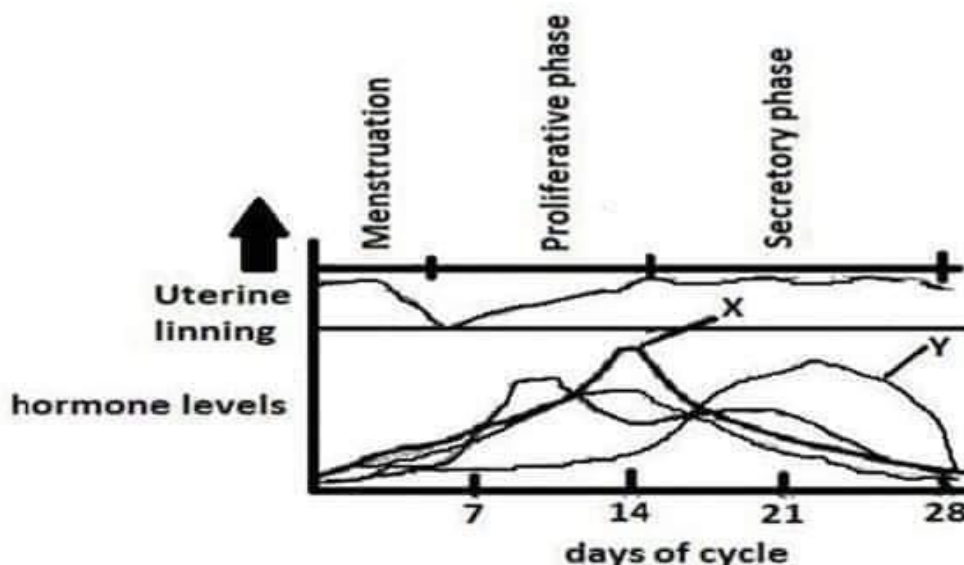
81. Which of the following RNA sequences would be transcribed from the DNA sequence ATGCCTAGGAC?

- A. TACGGATCCTG
- B. UAGCGAUCCUG
- C. AUGCCUAGGAC
- D. UACGGAUCCUG
- E. GCAUUCGAAGU

82. Human cells maintain concentration gradients across their plasma membranes, such that there is a high sodium concentration outside the cell and a high potassium concentration inside the cell. Suppose that within the cell membrane are sodium "leak" channels. These channels would allow sodium to

- A. move out of the cell by simple diffusion
- B. move into the cell by simple diffusion
- C. move out of the cell by facilitated diffusion
- D. move into the cell by facilitated diffusion
- E. move into the cell by active transport

### Questions 83-85



83. The hormone labeled X in the diagram is often used in over-the-counter diagnostic tests to determine when ovulation has occurred. This hormone is:

- A. estrogen
- B. progesterone
- C. FSH
- D. LH
- E. Testosterone



84. Based on the peak levels of hormone X, on what day of the cycle is ovulation most likely to occur?

- A. Day 21
- B. Day 14
- C. Day 12
- D. Day 25
- E. Day 28



**Educational  
Testing Service**

85. The hormone labeled Y in the diagram is:

- A. progesterone, secreted by the corpus luteum after ovulation has occurred
- B. progesterone, secreted by the ovary after ovulation has occurred
- C. estrogen, secreted by the corpus luteum after ovulation has occurred
- D. estrogen, secreted by the ovary after ovulation has occurred
- E. estrogen, secreted by the follicle before ovulation occurs

86. Which of the following statement(s) is/are correct regarding a nucleus?

- I. Stores wastes and other Substances
- II. Contains genetic material
- III. Helps in cellular transport system
- IV. Control centre of the cell

- A. I only
- B. I & II
- C. II & III
- D. II & IV
- E. III & IV

87. When the tuft of flagella are present at both the ends in the structure of bacterial cell, then the condition is known as:

- A. Atrichous
- B. Lophotrichous
- C. Peritrichous
- D. Amphitrichous
- E. Bitrichous

88. Cystic fibrosis patients lack a gene that codes for a transmembrane carrier of:

- A.  $\text{Na}^+$  ions
- B.  $\text{K}^+$  ions
- C.  $\text{Cl}^-$  ions
- D.  $\text{Ca}^{2+}$  ions
- E.  $\text{Mg}^{2+}$  ions



89. Which features do animal cells share with plant cells?

	Chloroplast	Cytoplasm	Nucleus	mitochondria
A	✓	✓	✓	✓
B	✓	×	✓	×
C	×	✓	✓	✓
D	×	×	×	✓

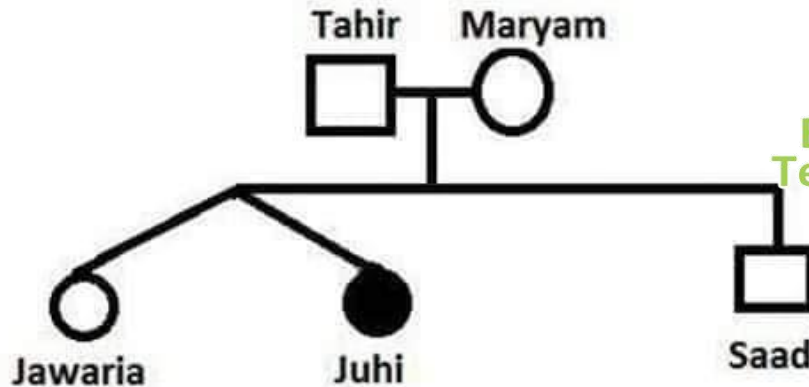
90. Platyhelminthes means:

- A. Flat worms
- B. Round worms
- C. Segmented worms
- D. None of the above

91. All of the following are mammals EXCEPT the:

- A. Porpoise
- B. Shark
- C. Whale
- D. Walrus
- E. Seal





92. In the pedigree of a family shown above, brown eyes are indicated as ○ and blue eyes as ●. Jawaria and Juhi are twins. From this chart, it can be determined that:

- A. Tahir and Mary are homozygous for brown eyes
- B. Jawaria and Juhi are identical twins
- C. Juhi is heterozygous for blue eyes
- D. Juhi is homozygous for blue eyes
- E. Jawaria and Saad are homozygous for brown eyes

93. Viruses resemble living things because they:

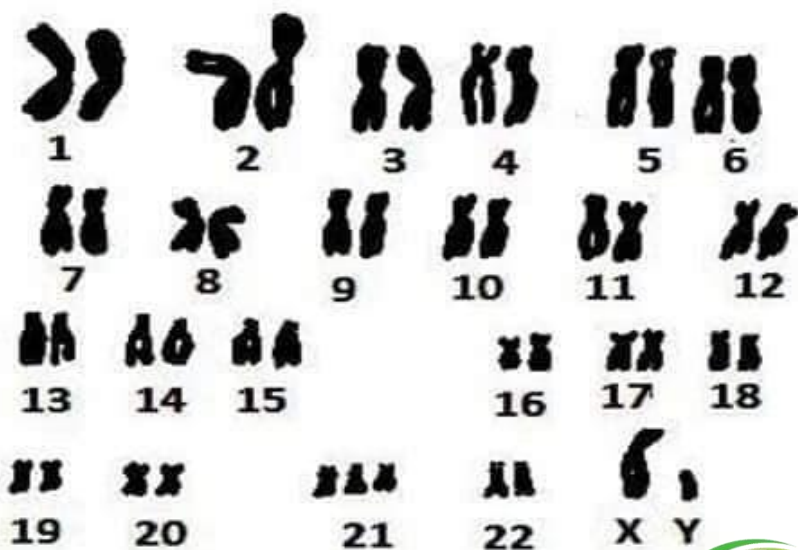
- A. Circulate
- B. Move
- C. Reproduce
- D. Are crystalline
- E. Are able to respond to stimuli in the environment

94. A part of the digestive system that is not in contact with food is the:

- A. Small intestine
- B. Stomach
- C. Liver
- D. Large intestine
- E. Trachea

95. All of the following protect the body against the entrance of germs except:

- A. Tears
- B. Mucous membranes
- C. Ciliated cells
- D. White blood cells
- E. Red blood cells



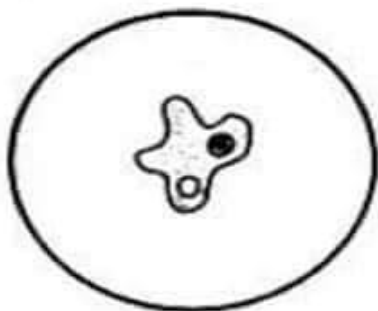
96. The above diagram illustrates:

- A. Hemophilia
- B. Phenylketonuria
- C. Sickle cell anemia
- D. Down's Syndrome



### Questions 97-98

A student studied a drop of pondwater with the low power of compound microscope and made the following exact drawing of an organism she observed:



97. In which kingdom is the organism classified?

- A. Protista
- B. Monera
- C. Metazoa
- D. Animal
- E. Bryophyta

S-17-3353-SMU-GREEN-22 1017

28

98. The organism moves by means of:

- A. Peristalsis
- B. Pinocytosis
- C. Porifera
- D. Protozoa
- E. Pseudopodia



Educational  
Testing Service

99. In a pyramid of energy, which level represents the greatest amount of energy?

- A. Producers
- B. First-order consumers
- C. Second-order consumers
- D. Third-order consumers
- E. Decomposers

100. The phenomenon known as crossing-over occurs during:

- A. Mitosis
- B. Meiosis
- C. Geographic distribution
- D. Active transport



Educational  
Testing Service



# National Testing Service Past Papers



ANSWER KEY (Green)			
Test Held on: Sunday, 22nd October 2017			
Question No	Correct Choice	Question No	Correct Choice
Q 1	C	Q 51	B
Q 2	D	Q 52	B
Q 3	E	Q 53	B
Q 4	B	Q 54	A
Q 5	B	Q 55	B
Q 6	E	Q 56	D
Q 7	B	Q 57	D
Q 8	C	Q 58	A
Q 9	A	Q 59	A
Q 10	B	Q 60	C
Q 11	D	Q 61	C
Q 12	A	Q 62	D
Q 13	A	Q 63	D
Q 14	E	Q 64	A
Q 15	D	Q 65	D
Q 16	A	Q 66	Question cancelled. One mark awarded to each candidate
Q 17	B	Q 67	A
Q 18	D	Q 68	B
Q 19	B	Q 69	C
Q 20	E	Q 70	B
Q 21	A	Q 71	A
Q 22	B	Q 72	C
Q 23	D	Q 73	B
Q 24	B	Q 74	A
Q 25	C	Q 75	D
Q 26	C	Q 76	B
Q 27	C	Q 77	B
Q 28	D	Q 78	A
Q 29	C	Q 79	A
Q 30	C	Q 80	C
Q 31	D	Q 81	D
Q 32	B	Q 82	D
Q 33	B	Q 83	D
Q 34	E	Q 84	B
Q 35	C	Q 85	A
Q 36	C	Q 86	D
Q 37	C	Q 87	D
Q 38	B	Q 88	C
Q 39	D	Q 89	C
Q 40	A	Q 90	A
Q 41	D	Q 91	B
Q 42	D	Q 92	D
Q 43	D	Q 93	C
Q 44	A	Q 94	C
Q 45	D	Q 95	E
Q 46	A	Q 96	D
Q 47	A	Q 97	A
Q 48	D	Q 98	E
Q 49	Question cancelled. One mark awarded to each candidate	Q 99	A
Q 50	C	Q 100	B





# Past Paper 2018

# NATIONAL TESTING SERVICE

## NTS past paper 2018

### ENGLISH

**Identify the word or phrase that needs to be changed for the sentence to be correct.**

1. It's too late to go for a walk now; besides, it's beginning to rain.

- A. It's
- B. Go
- C. Besides
- D. Beginning
- E. No Error

2. The quests broke a dozen glass at the party.

- A. The guests
- B. Broke
- C. Glass
- D. At :
- E. No error



**Complete the sentences by choosing the most appropriate option, from the given lettered choices (A to D/E) below each.**

3. He would like \_\_\_\_\_ have a job in the same office as his brother.

- A. too
- B. to
- C. of to
- D. get 4.

4. The road is wet. It must \_\_\_\_\_ raining.

- A. have been
- B. had
- C. has
- D. have

**Choose the word most similar in meaning to the capitalized one.**

**5. SHABBY:**

- A. organized
- B. untidy
- C. reluctant
- D. sensible

**6. FORBID:**

- A. prohibit
- B. chide
- C. permit
- D. constraint



**Questions 7-8**

Television is typical of many **new scientific words** which are deliberately invented from old Greek and **Latin words**. In this case the prefix 'tele' is Greek and means 'far' (of telephone, telegram), while the root 'vision' is derived from the Latin verb meaning 'to see'.

**7. The word "Television" is invented from:**

- A. English and Spanish
- B. French and Arabic
- C. Dutch and German
- D. Greek and Latin

**8. Which of the following gives the meaning of the prefix "tele"?**

- A. near
- B. close
- C. far
- D. away

**Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters.**

**9. SUPREMACY:**

- A. excellency
- B. sovereignty
- C. inferiority
- D. influence



**Educational  
Testing Service**

**10. PATRIOTISM:**

- A. nationalism
- B. socialism
- c. obsession
- D. disloyalty

**BIOLOGY**

**11. In which of the following growth phases, the number of bacteria increases the most rapidly?**

- A. Lag phase
- B. Log phase
- C. Stationary phase
- D. Death/decline phase



**12. Which of the following is the simplest form of pathogens causing diseases?**

- A. Viruses
- B. Prions
- C. Fungus
- D. Amoeba

**13. The category of organisms which are able to make their own food is called:**

- A. Heterotrophs
- B. Autotrophs
- C. Consumers
- D. Decomposers
- E. Saprotrophs

**14. The branch of science dealing with the fossil record is called:**

- A. Genetics
- B. Taxonomy
- C. Archeology
- D. Paleontology
- E. Biochemistry

15. Which of the following is the manipulation of genetic material for practical purposes?

- A. Grafting
- B. Tissue culture
- C. Genetic engineering
- D. Cell culture



Educational  
Testing Service

16. Which part of the cell does glycolysis occur in?

- A. Mitochondrion
- B. Chloroplast
- C. Cytoplasm
- D. Nucleus
- E. Vacuole

17. The technique used for Identification of criminals is called:

- A. Cloning
- B. DNA fingerprinting
- C. Restriction analysis
- D. Polymorphism
- E. Gene sequencing

18. Which of the following bacteria are able to release oxygen into the environment?

- A. Saprotrophic bacteria
- B. Parasitic bacteria
- C. Cyanobacteria
- D. Pathogenic bacteria

19. Which of the following is NOT the part of RNA?

- A. Nitrogenous bases
- B. Ribose sugars
- C. Deoxyribose sugars
- D. Phosphate groups
- E. Adenine



20. Referring to sexual reproduction, humans are:

- A. Hermaphrodites
- B. Viviparous
- C. Oviparous
- D. Self-fertilized

21. Which of the following is NOT the function of cell membranes?

- A. Protection of cytoplasm
- B. Regulating the passage of different molecules
- C. Protein synthesis
- D. Cellular communication
- E. Cellular transportation



22. Genetic information in the DNA is encoded as:

- A. Deoxyribose sugars
- B. Ribose sugars
- C. Phosphate groups
- D. Sequence of nitrogenous bases
- E. Sequence of phosphate group

23. The chromosomes with equal arms are called:

- A. Metacentric
- B. Submetacentric
- C. Acrocentric
- D. Telocentric

24. The disease arises due to age is:

- A. Alzheimer's
- B. Hepatitis
- C. Cholera
- D. Malaria
- E. Beriberi

25. Which of the following endoparasites of humans replicates within human cells? .

- A. Bacteria
- B. Leech
- C. Fungi
- D. Helminths

26. The disease caused by Protozoal infection is:

- A. Rickets
- B. Goitre
- C. Malaria
- D. Beri-beri
- E. Alzheimer's



27. Which of the following are divided by fission?

- A. Viruses
- B. Viroids
- C. Bacteria
- D. Fungus

28. In recombinant DNA technology, the copies of recombinant DNA are increased by:

- A. Restriction enzyme
- B. Ligase
- C. Selection of host with rDNA
- D. Multiplication of host with rDNA

29. The disease caused by nutritional deficiency is:

- A. Hepatitis
- B. Cholera
- C. Malaria
- D. Beriberi
- E. Alzheimer's

30. Which of the following basic structural level of proteins is *indicated* by an association of two alpha and two beta chains *in* the hemoglobin molecule?

- A. Primary structure
- B. Secondary structure
- C. Tertiary structure
- D., Quaternary structure

31. The branch of science dealing with the classification of life forms is called:

- A. Genetics
- B. Taxonomy
- C. Archeology
- D. Paleontology
- E. Biochemistry



32. Which of the following is NOT a part of the immune system?

- A. Phagocytes
- B. Complement proteins
- C. Cytokines
- D. Atherosclerosis

33. The system responsible for fighting the pathogens is:

- A. Muscular system
- B. Endocrine system
- C. Nervous system
- D. Immune system

34. Which one of the following organelles is required for aerobic respiration?

- A. Nucleus
- B. Mitochondria
- C. Endoplasmic reticulum
- D. Plastids
- E. Cytoskeleton



35. Please mark the one *Kingdom* having the most conspicuous living organisms?

- A. Monera
- B. Protista
- C. Anlmalla
- D. Plantae

36. Which of the following **phyla of Kingdom Animalla** does human belong to?

- A. Mollusca
- B. Arthropoda
- C. Echinodermata
- D. Chordata

37. Carbon dioxide joins the photosynthetic pathway at:

- A. PSI
- B. PSII
- C. Light reaction
- D. Dark reaction

38. The enzyme found in saliva responsible for the digestion of carbohydrates is:

- A. Lysozyme
- B. Amylase
- C. Pepsin
- D. Trypsinogen
- E. Lipase

39. The process by which one molecule of Glucose splits up into molecules of Pyruvate is called:

- A. Glycolysis
- B. Oxidative phosphorylation
- C. Electron transport chain
- D. Krebs cycle
- E. Calvin cycle

40. Which of the following is NOT a viral disease?

- A. AIDS
- B. Malaria
- C. Influenza
- D. Chicken pox
- E. Rabies



### PHYSICS

41. If in a circuit, 2 ampere current is drawn from the battery in 10 minutes. How much charge will flow through the circuit in this time ?

- A. 1200 Coulombs
- B. 600 Coulombs
- C. 500 Coulombs
- D. 20 Coulombs

42. If a car collides with a housefly, what will be the magnitude of the force experienced by the housefly?

- A. Much greater than the car experienced by the housefly
- B. Much lesser than the car experienced by the housefly
- C. Same as the car experienced by the housefly
- D. 10 times less than the car experienced by the housefly

43. In the photo electric effect, a photon of energy  $h\nu$  is incident on the metal surface. The energy required to eject the valence electron from the surface of the metal is expressed as:

- A. Wave nature of the light
- B. Compton scattering
- C. Melting point of the metal
- D. Work function of the metal



44. Bimetallic thermostat is an example of:

- A. Electric field
- B. Thermal expansion
- C. Heat engine
- D. Isobaric process

45. Let  $B$  be the magnetic field and a conductor of length  $L$  is moved across this field. Due to this activity, a potential difference appears across the ends of the conductor. This type of potential difference is termed as:

- A. Self-Induction
- B. Mutual Induction
- C. Motional E.M.F
- D. Electrostatic potential

46. If a dielectric material is placed between two plates of a capacitor, the net capacitance of the capacitor:

- A. Decreases
- B. Increases
- C. Remains constant
- D. Zero,

47. In free states, the mass of the nucleus is always:

- A. Greater than the mass of its constituents
- B. Equal to the mass of its constituents
- C. Less than the mass of its constituents
- D. Far greater than the mass of Its constituents



48. A solar day is the time Interval between two successive appearances of the sun overhead. The time that is referred to rotation of the earth about Its axis is called:

- A., Universal Time
- B. Length of the day
- C. Time Interval
- D. Solar day



49. If the sunlight is Incident on the photocell, the number of electrons emitted from the surface of the cell increases with the:

- A. Increase of light frequency
- B. Increase of light Intensity
- C. Decrease of light frequency
- D. Decrease of light intensity

50. In electronic circuits, a PN Junction diode is used to convert alternating current Into direct current. This process is called:

- A. Rectification
- B. Amplification
- C. Doping
- D. Integrated circuit

51. The process in which light bands around an obstacle is called:

- A. Diffraction of light
- B. Interference of light
- C. Reflection of light
- D. Polarization of light

52. Let  $X$  be a radioactive element having  $N_0$  nuclei. The time required to decay this element to one half of its initial number  $N_0$  is known as:

- A. Law of radioactive decay
- B. Decay constant
- C. Half life
- D. Decay Time

53. When an electron and its anti-particle positron come close enough to each other, they completely convert into radiation energy in the form of photons, this process is called:

- A. Photo electric effect
- B. Pair production
- C. Annihilation of matter
- D. Compton effect



54. There are different types of waves that exist in this universe. Which of the following waves do NOT need any material medium to travel?

- A. Sound waves
- B. Waves produced on a string
- C. Electromagnetic waves
- D. Waves produced on the water surface

55. A cyclist moving towards right with an acceleration of  $4\text{m}/\text{Sec}^2$ . At  $t=0$ , he has travelled  $5\text{m}$  moving towards the right at  $15\text{m}/\text{Sec}$ . What will be his position at  $t=2$  seconds?

- A. 36
- B. 38
- C. 41
- D. 43

56. In pure semiconductor materials, some impurities are added to change the properties of these semiconductors. This process is called:

- A. Crystallography
- B. Rectification
- C. Intrinsic defects
- D. Doping

57. Two forces equal in magnitude but opposite in direction and not acting along the same line constitute a couple. The movement of this couple will be:

- A. Dependent on the location of the origin
- B. Independent of the location of origin
- C. Zero
- D. Scalar product

58. In electromagnetic spectrum of radiations, the wavelength spectrum that is visible to humans lies in the range of:

- A. 100-400 nm
- B. 400-700 nm
- C. 700-1000 nm
- D. 1000-1500 nm

59. Equations of kinetics are valid only when the acceleration is:

- A. Increasing
- B. Decreasing
- C. Constant
- D. Vary with time



60. The process of natural decay of some heavy nuclides is because of the \_\_\_\_\_ phenomenon.

- A. Emission spectra.
- B. Nuclear fusion
- C. Nuclear fission
- D. Radioactivity

61. If constant temperature conditions are applied to a gas container, then the volume of the mass of that gas tends to Increase by:

- A. Decreasing the applied pressure .
- B. Increasing the applied pressure
- C. Increasing applied pressure with double force
- D. Increasing the weight

62. The atomic number  $Z$  of an atom represents the:

- A. Number of protons
- B. Number of electrons and protons
- c. Number of neutrons
- D. Sum of protons and neutrons

63. If constant current is flowing through a coil then flux through that coil will become constant. In such type of arrangements, the electromotive force emf induced in coil will be :

- A. Self-inductance
- B. Zero
- C. Mutual-Inductance
- D. Back emf

64. In simple harmonic motion, a particle is oscillating in such a way that its total energy remains conserved. When this particle reaches its two extreme positions, Its potential energy at extreme positions becomes:

- A. Minimum
- B. Maximum
- c. Zero
- D. Greater than its kinetic energy



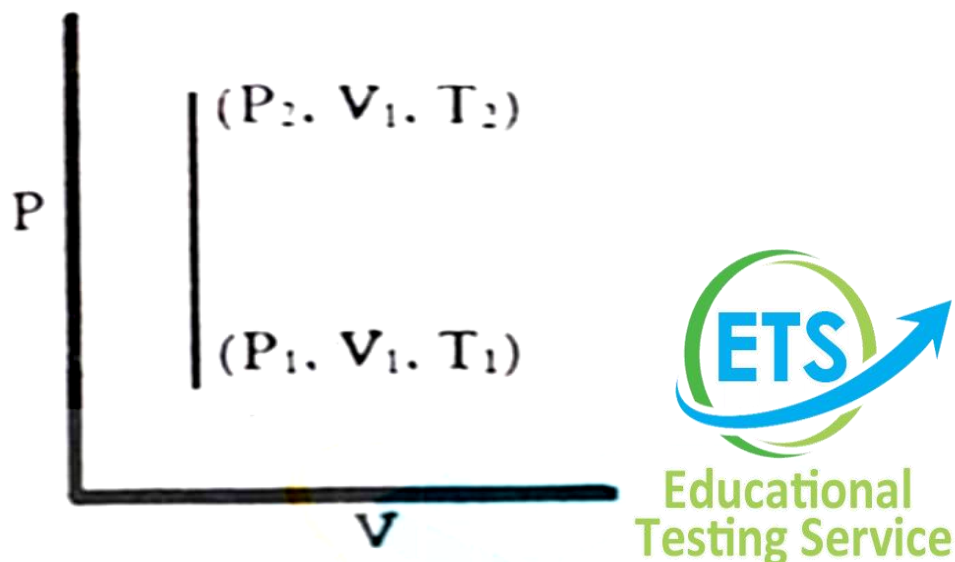
65. If we increase the area of a cross section of a conductor having a length  $L$ , the resistance  $R$  of that conductor will be:

- A. Zero
- B. Constant
- C. Increasing
- D. Decreasing

66. The efficiency of the Carnot engine working between temperatures  $177^{\circ}\text{C}$  and  $77^{\circ}\text{C}$  will be:

- A. 22.22%
- B. 23.23 %
- C. 25.25 %
- D. 30.30 %

67. Which process is shown in the graph between pressure and volume ?



- A. Adiabatic
- B. Isobaric
- C. Isochoric
- D. Isothermal

68. Which of the following phenomenon represents the wave nature, of light?

- A. Photoelectric effect
- B. Compton scattering
- C. Interference of light
- D. Pair production

69. Law of heat exchange is used to determine:

- A. Coefficient of linear expansion
- B. Coefficient of volume expansion
- C. Ideal gas constant
- D. Specific heat of substance

70. During radioactive decay of a nucleus  ${}^A_ZX$ ,  $\beta$  emission takes place along with daughter nucleus. Because of this beta particle emission, the mass number A of parent nucleus:

- A. Remains constant
- B. Decreases by 1
- C. Increases by 1
- D. Decreases by 2



**CHEMISTRY**

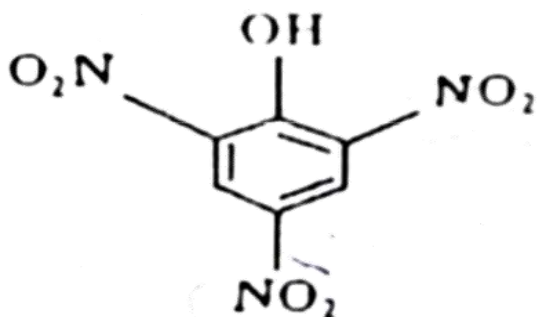
71. In which of the following nitrogen compounds, N has the highest oxidation state?

- A.  $\text{NH}_2\text{OH}$
- B.  $\text{N}_2\text{H}_4$
- C.  $\text{HNO}_3$
- D.  $\text{NH}_3$

72. Real gases behave Ideally at:

- A. Low temperature and low pressure
- B. Moderate temperature and low pressure
- C. High temperature and low pressure
- D. High temperature and high pressure

73. The figure mentioned below is commonly known as:



- A. Resorcinol
- B. Aspirin
- C. Picric acid
- D. Mesityl



74. Which alkyl halide has the lowest reactivity for a particular alkyl group?

- A. R-Cl
- B. R-F
- C. R-Br
- D. R-I

75. Which one of the following vitamins is required for normal growth, vision and keeping the skin healthy?

- A. Vitamin D
- B. Vitamin E
- C. Vitamin A
- D. Vitamin K

76. Which one of the following is the pure carbon compound and used as reducing agent in industries?

- A. Coal tar
- B. Petroleum
- C. Coal gas
- D. Coke



77. The alloy Dura lumin is composed of \_\_\_\_\_ of Al.

- A. 95%
- B. 90%
- C. 85%
- D. 80%

78. 106 gram of  $\text{Na}_2\text{CO}_3$  per  $\text{dm}^3$  of solution of  $\text{Na}_2\text{CO}_3$  in water, the concentration of the solution will be:

- A. 1N
- B. 0.1M
- C. 1M
- D. 0.02M

79. For the first time in 1911, Henry Moseley used X-rays for the determination of:

- A. Atomic number
- B. Atomic mass
- C. Molecular mass
- D. Equivalent mass

80. Which of the following properties depends upon the amount of matter present in the system?

- A. Density
- B. Gibb's free energy
- C. Pressure
- D. Temperature

81. Zwitter ion is formed when proton goes from:

- A. Amino to carboxyl group
- B. Carboxyl to amino group
- C. Carboxyl group only
- D. Amino group only



Educational  
Testing Service

82. For the following exothermic reaction, decrease in temperature will shift the equilibrium towards:  $2\text{NO (g)} + \text{O}_2\text{(g)} \rightleftharpoons 2\text{NO}_2\text{(g)}$

- A. Left
- B. The point of equilibrium
- C. Both directions
- D. Right

83. How many significant figures are there in 00.4793?

- A. 3
- B. 4
- C. 5
- D. 6



84. Which one of the following is NOT a meta directing group?

- A.  $\text{COOH}$
- B.  $\text{SO}_3\text{H}$
- C.  $\text{CHO}$
- D.  $\text{OH}$

85. The rate of a chemical reaction is directly proportional to the product of active masses of the reactants, it is referred to as:

- A. Law of conservation of energy
- B. Law of mass action
- C. Law of conservation of mass
- D. Active mass law

86. Which one of the following does NOT give iodoform test?

- A.  $\text{CH}_3\text{OH}$
- B.  $\text{CH}_3\text{CH}_2\text{OH}$
- C.  $\text{CH}_3\text{CHO}$
- D.  $\text{CH}_3\text{COCH}_3$

87. The boiling point of water is highest than other hydrides because water molecules can form:

- A. 4 hydrogen bonds
- B. 3 hydrogen bonds
- C. 2 hydrogen bonds
- D. 1 hydrogen bonds

88. When electricity is passed through water in the presence of an acid oxygen \_\_\_\_\_ is produced.

- A. Carbon
- B. CO
- C- CO<sub>2</sub>
- D. Hydrogen

89. The reaction  $2\text{CO} + \text{O}_2 \rightleftharpoons 2\text{CO}_2$  proceeds slower because of - activation energy of CO.

- A. equilibrium
- B. constant
- C. low
- D. high



90. Lithium and beryllium are unique in such a way that they have higher charge densities which produce strong polarizing effects due to:

- A. Nonmetal
- B. Solubility
- C. Small size
- D. Large size

91. The Neutron was discovered by:

- A. Goldstein
- B. Rutherford
- C. J.J Thomson
- D. De Chadwick

92. The normal pH of blood is:

- A. 7.75
- B. 7.35
- C. 7.25
- D. 7.05

93. Which of the following reactions is NOT shown by Ketones?

- A. Reaction with HCN
- B. Reaction with Fehling solution
- c. Reaction with  $\text{NaHSO}_3$
- D. Reaction with 2,4-dinitrophenyl-hydrazine

94. The melting point of NaCl is very high  $801^\circ\text{C}$ , It is reduced to  $600^\circ\text{C}$  by addition of \_\_\_\_\_. In Down's process,

- A. Calcium chloride
- B. Magnesium chloride
- C. Aluminum chloride
- D. Potassium chloride



95. The phenomenon in which certain elements emit invisible radiations is called:

- A. Spectroscopy
- B Radioactivity
- c. Gravimetry
- D. Chromatography

96. The number of bond(s) between carbon and nitrogen atoms in a Nitrile is:

- A. One sigma and one pi
- B. Two sigma and one pi
- C. Only sigma
- D. One sigma and two pi

97. The transparent plastic used to make combs and hair brushes is called:

- A PVA
- B. PVC
- c. Bakelite
- D. Perspex

98. In electrochemical series, elements are arranged in order of their standard electrode potentials, the correct decreasing reactivity order for metals is:

- A. Gold, silver, magnesium, aluminum
- B. Mercury, calcium, sodium, magnesium
- C. Sodium, aluminum, lead, copper
- D. Potassium, silver, magnesium, aluminum

99. Methyl orange is \_\_\_\_\_ in acidic solutions.

- A. yellow
- B. pink .
- C. orange .
- D. red

100. How many chain isomers are shown by  $C_5H_{12}$ ?

- A. 5
- B. 4
- C. 3
- D. 2



# National Testing Service Past Papers

## NTS TESTING SERVICE NTS ANSWER KEY 2018



Question#	Correct Choice	Question#	Correct Choice	Question#	Correct Choice	Question#	Correct Choice
1	E	26	C	51	A	76	D
2	C	27	C	52	C	77	A
3	B	28	D	53	C	78	C
4	A	29	D	54	C	79	A
5	B	30	D	55	D	80	B
6	A	31	B	56	D	81	B
7	D	32	D	57	B	82	D
8	C	33	D	58	B	83	B
9	C	34	B	59	C	84	D
10	D	35	C	60	D	85	B
11	B	36	D	61	A	86	A
12	B	37	D	62	A	87	A
13	B	38	B	63	B	88	D
14	D	39	A	64	B	89	D
15	C	40	B	65	D	90	C
16	C	41	A	66	A	91	D
17	B	42	C	67	C	92	B
18	C	43	D	68	C	93	B
19	C	44	B	69	D	94	A
20	B	45	C	70	A	95	B
21	C	46	B	71	C	96	D
22	D	47	C	72	C	97	D
23	A	48	A	73	C	98	C
24	A	49	B	74	B	99	D
25	A	50	A	75	C	100	C



# Past Paper 2019

# NATIONAL TESTING SERVICE



## ENGLISH

Choose the word most similar in meaning to the capitalized one.

### 1. DEMONSTRATE:

- A. Establish
- B. Invent
- C. Produce
- D. Show

### 2. FLEE:

- A. Escape
- B. Face
- C. Fear
- D. Flow



### 3. UNAMBIGUOUS:

- A. Exact
- B. Clear
- C. Interesting
- D. Sufficient

### 4. LEGEND:

- A. History
- B. Outburst
- C. Place
- D. Story

### Questions 5-6

That freedom means freedom only from foreign domination, is an outworn idea. It is not merely governments that should be free but the people themselves who should be free; and no freedom has any real value for the common man or woman unless it means freedom from want, freedom from disease, freedom from ignorance. This is the main task which confronts us if we are to take our rightful place in the modern world. We cannot hold the clock back, and therefore it is we who must go forward at a double pace, bending all our resources and all our energies to this great purpose.

5. An "outworn" idea is \_\_\_\_\_

- A. Great
- B. Not new
- C. Scientific
- D. Undeveloped

6. "The great purpose" mentioned by the writer at the end of the passage refers to \_\_\_\_\_

- A. Freedom from foreign domination
- B. People themselves should be free
- C. The real value of freedom
- D. Taking our rightful place in the modern world

Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters.

7. BRILLIANT:

- A. Adequate
- B. Dull
- C. Troubled
- D. Unprejudiced

8. ENFEEBLED:

- A. Distanced
- B. Dominant
- C. Mistaken
- D. Powerful

9. INVADERS:

- A. Characteristics
- B. Historians
- C. Inhabitants
- D. Results

10. UNLIKELY:

- A. Familiar
- B. Possible
- C. Powerful
- D. Take for granted





## Questions 11-12

Anglo-Saxon is now, of course, a dead language, but a good deal of its vocabulary has survived, in one form or another to the present day. Most of the very common words in modern English are Anglo-Saxon in origin: nouns like father, mother, food, drink, bed, hunger; most of the prepositions and conjunctions; and nearly all the strong verbs. When it was mixed with Norman French, there were three main results: the grammar was simplified, the pronunciation and spellings became much more complicated and the vocabulary was enormously extended. French is a Latin language, so the major part of our vocabulary is now Latin in origin.

11. A "dead language" is \_\_\_\_\_.

- A. A dialect of language
- B. Latin language
- C. Mixed with other languages
- D. No more spoken



Educational  
Testing Service

12. The vocabulary was "enormously extended" means vocabulary has \_\_\_\_\_.

- A. Increased
- B. Reduced
- C. Simplified
- D. Survived

Identify the word or phrase that needs to be changed for the sentence to be correct.

13. When I go into a bank, I get frighten.

- A. When
- B. A
- C. Get
- D. Frighten

*is frighten*

14. The fact of the matter is never I'd been out to the theatre that night, had supper afterwards, and came in late.

- A. Never
- B. That
- C. Afterwards
- D. Late

15. In Maxwell's days no instruments had been made which could register the greatly enormously long waves of electricity.

- A. No
- B. Could
- C. Greatly
- D. Long

16. This long experience of European domination has naturally produced a mood of quite resistance.

- A. This
- B. Long
- C. European
- D. Quite

Complete the sentences by choosing the most appropriate option, from the given lettered choices (A to D) below each.

17. The house \_\_\_\_\_ before we moved in.

- A. paint
- B. painted
- C. has painted
- D. was painted

18. Her hair was hanging \_\_\_\_\_ her back.

- A. beyond
- B. by
- C. down
- D. from

19. We must \_\_\_\_\_ back by six o'clock.

- A. be
- B. can
- C. has
- D. have

20. Birds usually \_\_\_\_\_ eggs in their nests.

- A. laid
- B. lain
- C. lay
- D. lie



## CHEMISTRY

21. Which of the following gases is used for welding purposes?

- A. ethene
- B. ethane
- C. propane
- D. ethyne

22. The chief ore of Aluminum is:

- A.  $\text{Na}_3\text{AlF}_6$
- B.  $\text{Al}_2\text{O}_3 \cdot n\text{H}_2\text{O}$
- C.  $\text{Al}_2\text{O}_3$
- D.  $\text{Al}_2\text{O}_3 \cdot \text{H}_2\text{O}$



Educational  
Testing Service

23.  $sp^3$  hybrid orbitals are formed by the mixing of:

- A. One s and two p
- B. One s and three p
- C. One s and one p
- D. Two s and two p

24. Which one of the following bond has highest bond energy?

- A.  $\text{C}=\text{C}$
- B.  $\text{C}\equiv\text{C}$
- C.  $\text{N}\equiv\text{N}$
- D.  $\text{H}-\text{F}$

25. Diamond is a bad conductor because it:

- A. has a tight structure
- B. has high density
- C. has no free electron in crystal
- D. is transparent to light

26. Ethers show the phenomenon of:

- A. Position isomerism
- B. Functional group isomerism
- C. Metamerism
- D. Cis-trans isomerism



27. Metallic character of the elements:

- A. decreases down the groups
- B. increases down the groups
- C. decreases across the periods
- D. increases across the periods



28. The nature of positive rays depends on **Educational Testing Service**

- A. The nature of the electrode
- B. The nature of the discharge tube
- C. The nature of the residual gas
- D. The shape of the electrode

29. The net heat change in a chemical reaction is same, whether it is brought about in two or more different ways in one or several steps. It is known as:

- A. Henry's law
- B. Hess's law
- C. Joule's principle
- D. Dalton's law

30. The volume occupied by 1.4 g  $N_2$  at STP is:

- A. 22.4 dm<sup>3</sup>
- B. 1.12 dm<sup>3</sup>
- C. 11.2 dm<sup>3</sup>
- D. 1.4 dm<sup>3</sup>

28 = 2

1.4 1.12

31. Molarity of pure water is:

- A. 01
- B. 18
- C. 36
- D. 55.5

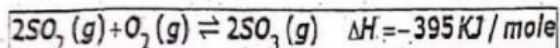
32. The value of R (the gas constant) is:

- A. 0.0821 dm<sup>3</sup> atm K mole<sup>-1</sup>
- B. 803143 Nm K<sup>-1</sup> mole
- C. 0.0821 dm<sup>3</sup> atm K<sup>-1</sup> mole<sup>-1</sup>
- D. 8.3143 dm<sup>3</sup> atm K<sup>-1</sup> mole<sup>-1</sup>

33. Tritium, an isotope of hydrogen contains:

- A. Equal number of electrons and neutrons
- B. Equal number of electrons, protons and neutrons
- C. Number of neutrons are double than the number of protons
- D. Number of neutrons are half than the number of protons

34. Which statement about the following equilibrium is correct?



- A. The value of  $K_p$  falls with rise in temperature
- B. The value of  $K_p$  falls with increase in pressure
- C. The value of  $K_p$  is equal to  $K_c$
- D. The value of  $K_p$  remains constant with rise in temperature

35. The chemical name of  $[\text{Zn}(\text{OH})_4]^{2-}$  is:

- A. Tetrahydroxy zinc (II)
- B. Tetrahydroxo zincate (IV)
- C. Tetrahydroxo zincate (II)
- D. Pentahydroxy zincate (II)



36. When 5d orbital is complete, the entering electron will go to:

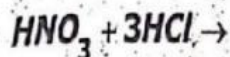
- A. 6s
- B. 6p
- C. 5p
- D. 4f

37. Which of the following of pair groups belong to meta directing groups?

- A.  $-\text{NH}_2$  and  $-\text{NO}_2$
- B.  $-\text{OR}$  and  $-\text{OH}$
- C.  $-\text{NO}_2$  and  $-\text{SO}_3\text{H}$
- D.  $\text{Cl}$  and  $-\text{COOH}$

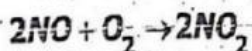


38. What are the products of the below mentioned equation?



- A.  $2\text{H}_2\text{O} + \text{NOCl} + \text{Cl}_2$
- B.  $\text{H}_2 + \text{NOCl} + 2\text{HOCl}$
- C.  $\text{H}_2\text{O} + \text{NO}_2\text{Cl} + 2\text{HCl}$
- D.  $2\text{H}_2\text{O} + \text{NOCl} + 2\text{Cl}$

39. What is the order of the following reaction:



- A. 0
- B. 1
- C. 2
- D. 3



40. One Calorie is equivalent to:

- A. 0.4184 J
- B. 41.84 J
- C. 4.184 J
- D. 418.4 J

41. Paramagnetic elements contain:

- A. All paired electrons
- B. All unpaired electrons
- C. Few unpaired electrons
- D. Unequal electrons and protons

42. How many atmospheres correspond to 1050 torr?

- A. 1.050
- B. 10.38
- C. 1.380
- D. 2.760

CHAPTER NO2 51 YEAR

43. The mass of an electron is:

- A. 1.008 amu
- B. 1.009 amu
- C. 0.000550 amu
- D. 0.5500 amu

CHAPTER NO3 51 YEAR

44. The rate of E1 reaction depends upon:

- A. The concentration of substrate
- B. The concentration of nucleophile
- C. The concentration of nucleophile and substrate
- D. The amount of the solvent used

45. The number of bonds in nitrogen molecules are:

- A. One  $\sigma$  and one  $\pi$
- B. One  $\sigma$  and two  $\pi$
- C. Three  $\sigma$  only
- D. Two  $\sigma$  and one  $\pi$

46. An ionic compound  $A^+B^-$  is most likely to be formed when:

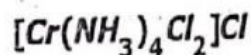
- A. The ionization energy of A is high and electron affinity of B is low
- B. The ionization energy of A is low and electron affinity of B is high
- C. Both ionization energy of A and electron affinity of B are equal
- D. Both ionization energy of A and electron affinity of B are high

47. The electrophile in aromatic sulphonation is:

- A.  $H_2SO_4$
- B.  $HSO_4^-$
- C.  $SO_3H^+$
- D.  $SO_3$



48. Choose the correct IUPAC name for the following complex.

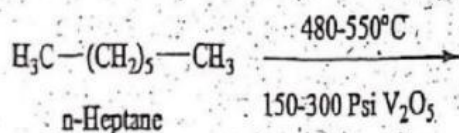


- A. trichlorotetra amine chromium (III)
- B. Dichlorotetra amine chromium (III) chloride
- C. Dichlorotetra ammonia chromium (III) chloride
- D. Dichlorotetra amine chromate (III) chloride

49.  $SN^2$  reactions can be best carried out with:

- A. Primary alkyl halides
- B. Secondary alkyl halides
- C. Tertiary alkyl halides
- D. Both primary and tertiary alkyl halides

50. Name the main product formed in result of the following reaction.



Educational  
Testing Service

- A. Benzene
- B. Toluene
- C. Xylene
- D. Cycloheptane

51. The pH of  $10^{-3} \text{ mol dm}^{-3}$  of an aqueous solution of  $\text{H}_2\text{SO}_4$  is:

- A. 3.0
- B. 2.7
- C. 2.0
- D. 1.5

52. The oxidation state of  $\text{Cl}$  in  $\text{HClO}_4$  is:

- A. -1
- B. +5
- C. +7
- D. -7

53. In a zero order reaction, the rate is independent of:

- A. temperature of reaction
- B. concentration of reaction
- C. concentration of products
- D. catalyst used

54. Which one of the following is NOT a nucleophile?

- A.  $\text{H}_2\text{S}$
- B.  $\text{BF}_3$
- C.  $\text{NH}_3$
- D.  $\text{CN}^-$



55. Which of the following molecules have zero dipole moments?

- A.  $\text{NH}_3$
- B.  $\text{CHCl}_3$
- C.  $\text{H}_2\text{O}$
- D.  $\text{BF}_3$

56. The ligand field effect splits five degenerated d-orbitals into two sets with different energies, the pair of high energy degenerate orbitals is:

- A.  $d_{xy}, d_{yz}$
- B.  $d_{yz}, d_{zx}$
- C.  $d_{x^2-y^2}, d_{z^2}$
- D.  $d_{x^2-y^2}, d_{y^2}$



Educational  
Testing Service

57. The change in heat energy of a chemical reaction at constant temperature and pressure is called:

- A. Enthalpy change
- B. Heat of sublimation
- C. Internal energy change
- D. Heat of formation

58. A catalyst increases the rate of reaction by:

- A. decreasing the activation energy
- B. decreasing the concentration of reactants
- C. decreasing the temperature
- D. increasing the temperature

59. The unit cell parameters of mono clinic system are:

- A.  $a = b \neq c \quad \alpha = \beta = \gamma = 90^\circ$
- B.  $a \neq b \neq c \quad \alpha = \gamma = 90^\circ \quad \beta \neq 90^\circ$
- C.  $a \neq b = c \quad \alpha = \beta = 90^\circ \quad \gamma \neq 90^\circ$
- D.  $a = b = c \quad \alpha = \beta = \gamma = 90^\circ$

60. Which of the following will have maximum value of heat of hydration?

- A.  $\text{Na}^+$
- B.  $\text{Cs}^+$
- C.  $\text{Mg}^{+2}$
- D.  $\text{Ca}^{+2}$



Educational  
Testing Service

61. The colour of transition metal complexes is due to:

- A. d-d transition of electrons
- B. Paramagnetic nature of transition elements
- C. Loss of s-electrons
- D. Refraction phenomenon

62. Determine the significant figures in 0.0085.

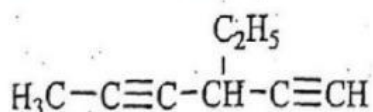
- A. 4
- B. 3
- C. 2
- D. 1

CHAPTER NO 1 FIVEAR

63. Orbitals having same energy are called:

- A. Hybrid orbitals
- B. Degenerate orbitals
- C. Valence orbitals
- D. Sub-orbitals

64. Write the chemical name of the given structure.



- A. 4-ethyl-2,5-hexadiyne
- B. 3-ethyl-1,4-hexadiene
- C. 3-ethyl-1,4-hexadiyne
- D. 3-ethyl-2,5-hexadiyne

65. Copper (Cu, Z=29) is a:

- A.  $d^1$  system with respect to electronic configuration
- B.  $d^3$  system with respect to electronic configuration
- C.  $d^7$  system with respect to electronic configuration
- D.  $d^{10}$  system with respect to electronic configuration

CHAPTER NO 1 (INTER)

66. The carbon number of gasoline is:

- A.  $C_5 - C_6$
- B.  $C_6 - C_7$
- C.  $C_5 - C_{10}$
- D.  $C_{12} - C_{15}$



Educational  
Testing Service

67. The oxidation number of  $Br$  in  $Br_2$  is:

- A. -1
- B. -2
- C. 0
- D. +1

68. The number of moles of  $CO_2$  which contain 8.0 g of oxygen is:

- A. 0.25
- B. 0.50
- C. 0.75
- D. 1.0

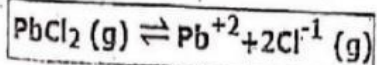
69. Hydrogen bonds are represented by: ✓

- A. dative bonds
- B. full bond
- C. partial charges
- D. dotted bonds

70. Effusion of gases take place through a hole with:

- A. Hole dimensions
- B. Infinite dimensions
- C. Slit like dimensions
- D. Molecular dimensions

71. The units of  $K_{sp}$  for the following reaction are:



- A.  $mol\ dm^{-6}$
- B.  $mol^2\ dm^{-3}$
- C.  $mol^3\ dm^{-9}$
- D.  $mol\ dm^{-9}$

S-20-3525-LUMHS- MBBS&BDS&PHARMAC-GREEN-15092019

13



72. In t-butyl alcohol, the tertiary carbon is bonded to:

- A. No H-atoms
- B. One H-atoms
- C. Three H-atoms
- D. Four C-atoms

73. The oxidation potential standard hydrogen electrode is arbitrarily taken as:

- A. -0.76 volts
- B. 0.00 volts
- C. +1.5 volts
- D. 1.0 volts



Educational  
Testing Service

74. Down's cell is used to prepare:

- A. Sodium carbonate
- B. Sodium bicarbonate
- C. Sodium hydroxide
- D. Sodium metal

CHAPTER NO3 INTER

75. Which of the hydrogen compounds has the highest percentage of ionic character?

- A. HCl
- B. HBr
- C. HI
- D. HF

76. Quantum number values for 2p orbitals are:

- A.  $n=2$   $l=1$
- B.  $n=2$   $l=2$
- C.  $n=2$   $l=0$
- D.  $n=1$   $l=0$

77. Solubility product of  $\text{AgCl}$  is  $2.0 \times 10^{-10} \text{ mol}^2 \text{ dm}^{-6}$

Maximum concentration of  $\text{Ag}^+$  ions in the solution is:

- A.  $2.0 \times 10^{-12} \text{ mol dm}^{-3}$
- B.  $1.4 \times 10^{-12} \text{ mol dm}^{-3}$
- C.  $1.0 \times 10^{-12} \text{ mol dm}^{-3}$
- D.  $2.5 \times 10^{-10} \text{ mol dm}^{-3}$

78. A limiting reactant is the one, which:

- A. Is taken in lesser quantity in grams as compared to the other reactant
- B. Is taken in lesser quantity in volume as compared to the other reactant
- C. gives the minimum amount of the product which is required
- D. gives equal amount of the reactants and products

79. The chemical formula of Tincal is:

- A.  $\text{Na}_2\text{B}_2\text{O}_7 \cdot 10\text{H}_2\text{O}$
- B.  $\text{Na}_2\text{B}_4\text{O}_7 \cdot \text{H}_2\text{O}$
- C.  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$
- D.  $\text{Na}_2\text{B}_2\text{O}_5 \cdot 10\text{H}_2\text{O}$



80. Hydrogen resembles with the elements of groups:

- A. I-A, V-A and VIII-A
- B. I-A, IV-A and VI-A
- C. I-A, II-A and VII-A
- D. I-A, IV-A and VII-A

CHAPTER NO 2     INTER

BIOLOGY

81. In sexual reproduction, sex cells contain \_\_\_\_\_ number of chromosomes when compared to other cells of body.

- A. Same
- B. ☒ Half
- C. Double
- D. All of the above

82. Kinetochore is a complex of \_\_\_\_\_ associated with the centromere of a chromosome to which the microtubules of the spindle attach.

- A. DNA
- B. Carbohydrates
- C. ☒ Proteins
- D. Nucleosomes



83. Pituitary gland releases \_\_\_\_\_ hormone and \_\_\_\_\_ hormone, while ovaries produce \_\_\_\_\_ and progesterone.

- A. Follicle stimulating and luteinizing, estrogen
- B. Estrogen and follicle stimulating, luteinizing
- C. Luteinizing and estrogen, follicle stimulating
- D. Follicle stimulating and estrogen, luteinizing

84. In higher animals' bodies, tissue fluid is isotonic as contrary to plants because in plant's cell:

- A. Cell membrane creates resistance in water uptake
- B. Plastids creates resistance in water uptake
- C. Chlorophyll creates resistance in water uptake
- D. Cell wall creates resistance in water uptake

85. Which one is NOT an involuntary function?

- A. Breathing
- B. Pumping of blood
- C. Skeletal muscle movement
- D. Blinking of eyes

86. In gametogenesis, which resultant product is non-functional?

- A. Spermatogonia
- B. ☒ Oogonia
- C. Polar body
- D. Ovum



87. The passageways of the respiratory system are lined by mucous secreting cells called \_\_\_\_\_.

- A. Tracheal cells
- B. Goblet cells
- C. Surfactant cells
- D. Pleural cells

88. Virus can only survive and reproduce inside a \_\_\_\_\_.

- A. Animal cell
- B. Bacterial cell
- C. Living cell
- D. Non-living cell

89. In addition to smaller hind limb muscle mass, the mutant "mini muscle" gene exhibit lower heart rates during physical activity, larger kidneys and livers in mice. This is a very good example of \_\_\_\_\_.

- A. Epistasis
- B. Multiple alleles
- C. Co dominance
- D. Pleiotropy

90. \_\_\_\_\_ is the stage of mitosis characterized by the physical separation of \_\_\_\_\_ chromatids.

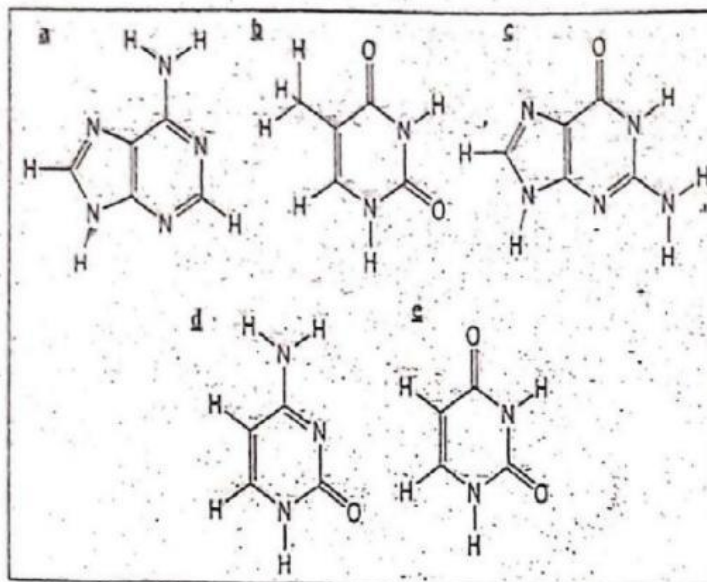
- A. Interphase, Offspring
- B. Telophase, F1 chromatids
- C. Metaphase, Homologous
- D. Anaphase, Sister

91. A man who has type AB blood could not father a child with type \_\_\_\_\_ blood, because he would pass on either the \_\_\_\_\_ or the B allele to all of his offspring.

- A. A, O
- B. O, A
- C. B, O
- D. B, A



92. Identify purine and pyrimidines from the following figures:



- A. a and b purines, c, d, and e pyrimidines
- B. d and b purines, c, a, and e pyrimidines
- C. a and e purines, c, d, and b pyrimidines
- D. a and c purines, b, d, and e pyrimidines

93. A cross between a black cat and a tan cat produces a tabby pattern (black and tan fur together). What percent of kittens would have tan fur if a tabby cat is crossed with a black cat?

- A. 100%
- B. 50 %
- C. 25%
- D. 0%

94. Which factor decides what type of variation should be flourished and passed on in to the next generations?

- A. Species
- B. Population
- C. Survival
- D. Environment

95. Haemophilia is a sex linked \_\_\_\_\_ trait.

- A. Dominant
- B. Codominant
- C. Pleitropic
- D. Recessive

**ETS**  
Educational  
Testing Service

3:16 PM

22

96. Which of the following is a type of cell division that plays an important role in evolution?

- A. Meiosis
- B. Mitosis
- C. Apoptosis
- D. Amitosis

97. The "d" and "D" alleles are used for lighter and darker skin color in humans respectively. By keeping in view the inheritance pattern of skin color in human beings, choose which combination is showing medium skin color from the following picture:

		a	b	c	d	e
a	Gene 1	$d^1 d^1$	$d^1 D^1$	$D^1 D^1$	$D^1 d^1$	$D^1 D^1$
b	Gene 2	$d^2 d^2$	$d^2 D^2$	$D^2 d^1$	$D^2 d^2$	$D^2 D^2$
c	Gene 3	$d^3 d^3$	$d^3 d^3$	$d^3 d^3$	$D^3 D^3$	$D^3 D^3$

- A. Column a
- B. Column c
- C. Row b
- D. Row c



98. There existed two varieties of Female Fresh Water Mollusks in which some were streamlined and some had high bulge. Over the generations, Male Fresh Water Mollusks learned that high bulge favors more production of offspring. So they started preferring to mate with females having high bulge as compared to streamlined. Will this effect Hardy Weinberg equilibrium in the population?

- A. No, it will not affect Hardy Weinberg equilibrium
- B. Yes, it will effect Hardy Weinberg equilibrium
- C. It will help to balance equilibrium
- D. Hardy Weinberg equilibrium doesn't apply here

99. A \_\_\_\_\_ is mostly a non-protein chemical compound that is required for the protein's biological activity.

- A. Active site
- B. Substrate
- C. Cofactor
- D. Enzyme



100. All of the following belong to same kingdom EXCEPT:

- A. Plasmodium
- B. Fern
- C. Chlamydomonas
- D. Euglena

101. Why some vegetables lose water when salt is applied to them?

- A. Due to less negative water potential of external environment than the cell
- B. Due to more negative water potential of external environment than the cell
- C. Due to less positive water potential of external environment than the cell
- D. Due to more positive water potential of external environment than the cell

102. What type of protein is present in eukaryotic DNA but NOT in prokaryotic DNA?

- A. Receptor protein
- B. Glycoprotein
- C. Chromatid protein
- D. Histone protein



103. Whenever a muscle contracts, a sarcomere can be shorten up to \_\_\_\_\_ % of its total length.

- A. 15
- B. 25
- C. 35
- D. 45

104. The second stage of the Prophase of Meiosis, following Leptotene, during which homologous chromosomes begin to pair is called:

- A. Anaphase
- B. Zygotene
- C. Diplotene
- D. Pachytene

105. Formation of \_\_\_\_\_ will be greater with the faster break down of glucose and glycogen to compensate energy requirements in an aerobic respiration.

- A. Enzymes
- B. Hormones
- C. Lactic acid
- D. Fat

106. A strand, almost \_\_\_\_\_ nucleotides long is wrapped around a core of \_\_\_\_\_ histone proteins to form a structure called a Nucleosome.

- A. 200-4
- B. 200-8
- C. 200-16
- D. 2000-4

107. A group of biologically active molecules formed from amino acids which interact with the surface of the lipid bilayer of cell membranes are called \_\_\_\_\_.

- A. Integral Proteins
- B. Peripheral proteins
- C. Cell wall
- D. Plasmodesmata

108. Transport of three protons through the ATPase complex are required for the production of one \_\_\_\_\_.

- A. Sugar molecule
- B. NADP molecule
- C. ATP molecule
- D. NADPH molecule

109. Which one of the following options is NOT an example of genetic engineering?

- A. Insulin producing bacteria
- B. Oil eating bacteria
- C. Photosynthetic bacteria
- D. Metal extracting bacteria

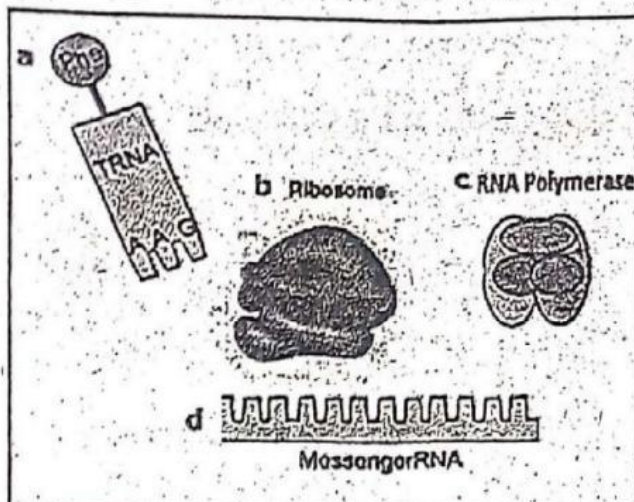
110. In a forest there are a lot of plants; trees, shrubs and herbs. What will the Palm trees face if they grow in the same forest?

- A. Intra specific competition
- B. Inter specific competition
- C. Environmental competition
- D. All of the above



Educational  
Testing Service

111. Pick the odd one out in the following picture.



- A. A
- B. B
- C. C
- D. D



Educational  
Testing Service

112. While working in a laboratory, before studying a sample under microscope, it was immersed in a dye solution to obtain

- A. Magnification
- B. Image
- C. Match
- D. Contrast

113. Pathway of energy used by muscles converted from food is:

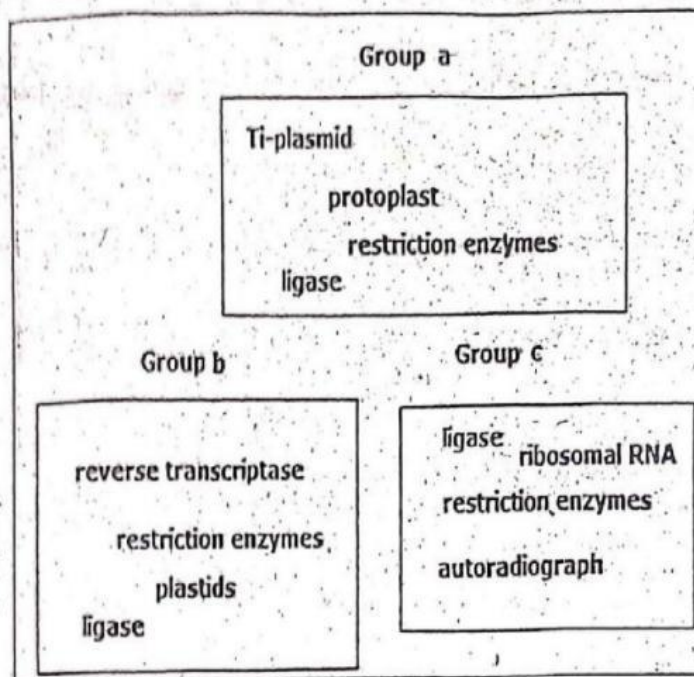
- A. Food-ATP-creatine phosphate- protein
- B. Food- glycogen- ATP-creatine phosphate
- C. Food- glycogen-creatine phosphate- ATP
- D. Food- protein-creatine phosphate- ATP

114. A \_\_\_\_\_ is an organism that makes ATP by aerobic respiration if oxygen is present, but is capable of switching to fermentation, if oxygen is absent.

- A. Cellular anaerobe
- B. Respiratory anaerobe
- C. Obligate anaerobe
- D. Facultative anaerobe



115. Choose the best group from the following to produce transgenic plants in the laboratory:



- A. Group a
- B. Group b
- C. Group b and c
- D. Group c

116. Which one of the following is NOT a mode of transmission of AIDS?

- A. Through unsterilized needles
- B. Through contact with open wounds
- C. Through blood transfusion
- D. Through holding hands



117. The following results of a cross between two individuals shown in the picture is:

	b	b
B	Bb	Bb
b	bb	bb

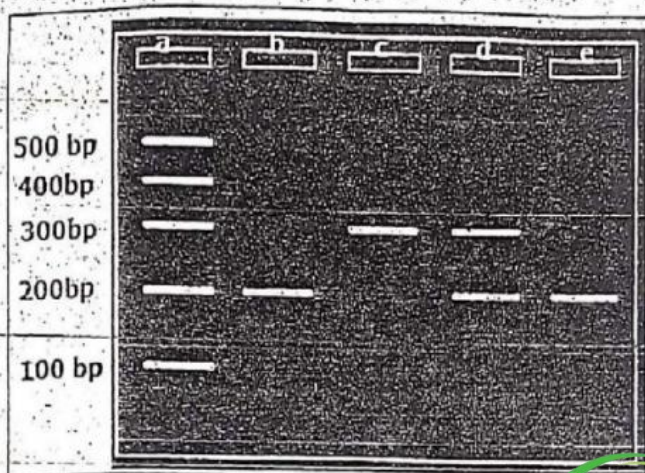


- A. One that is homozygous dominant and other has a dominant phenotype, but has a mother with recessive phenotype.
- B. One that is homozygous recessive and other has a dominant phenotype, but has a mother with recessive phenotype.
- C. One that is homozygous recessive and other has a dominant phenotype, but has a brother with recessive phenotype.
- D. One that is homozygous recessive and other has a recessive phenotype, but has a father with dominant phenotype.

118. An enzyme called \_\_\_\_\_ is responsible for copying a DNA sequence into an RNA sequence.

- A. Restriction enzyme
- B. Reverse transcriptase
- C. RNA polymerase
- D. DNA polymerase

119. Following picture is of \_\_\_\_\_ technique, as DNA molecules are separated on the basis of their size and speed in it.



- A. Cloning
- B. Recombinant DNA technique
- C. Cell culture
- D. Gel Electrophoresis



120. When plant cell receives a signal for death, it commits suicide by rupturing:

- A. Nucleus
- B. Cell membrane
- C. Tonoplast
- D. Chloroplast

121. Cell permeability and transport processes of Cell Membrane depend upon its \_\_\_\_\_ component.

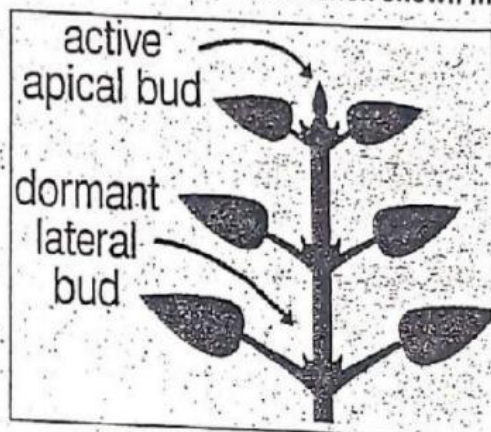
- A. Phospholipid
- B. Carbohydrates
- C. Polysaccharide
- D. Cellulose

122. Which disorder among the following CANNOT be detected by amniocentesis?

- A. Haemophilia
- B. Heart defects
- C. Tay-Sachs disease
- D. Cystic fibrosis



123. What is the phenomenon shown in the following picture?



Educational  
Testing Service

- A. Abscission
- B. Senescence
- C. Apical dominance
- D. Ripening

124. In a laboratory while working on a new species of fish, it is found that the fish has two varieties, red and brown. It was determined by another group of scientists in another laboratory that brown is a dominant color in this species. If we have brown fish with us in the laboratory, how can we determine whether they are homozygous or heterozygous for the trait?

- A. Breed this fish with a red fish and check F1 generation
- B. Breed this fish with a red fish and check F2 generation
- C. Breed this fish with a brown fish and check F1 generation
- D. Breed this fish with a brown fish and check F2 generation

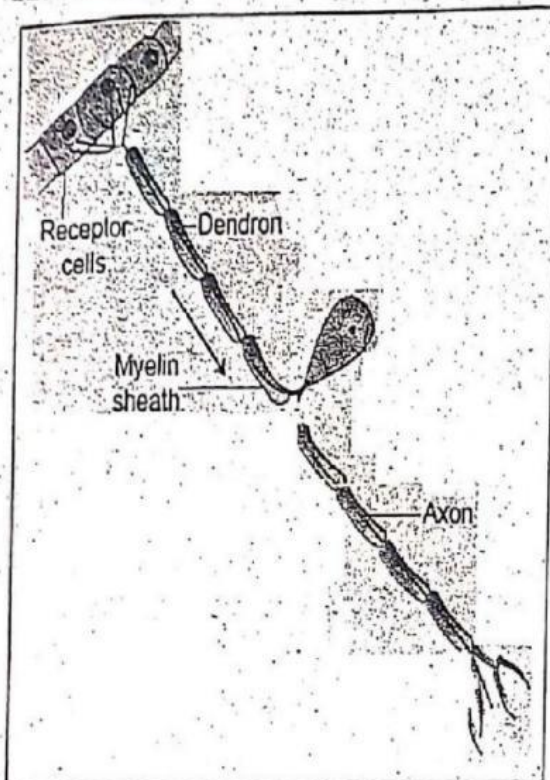
125. Which one is NOT true for co-ordination in animals?

- A. Transmission by the nervous system is short-lived, whereas transmission by the hormonal system is long-lasting.
- B. The nervous system uses electrical impulses to send signals through neurons, whereas the hormonal coordination uses chemical messengers transported into blood
- C. Responses are often permanent in the hormonal system, but temporary and reversible in the nervous system
- D. In nervous system, secretory chemicals are released in blood while in hormonal system; secretory chemicals are released in extracellular fluids.

126. Plant pigments responsible for red, yellow and orange colors in many fruits and vegetables are:

- A. Chlorophyll a
- B. Chlorophyll b
- C. Carotenoids
- D. Cellulose

127. What does the following picture show?



**ETS**  
Educational  
Testing Service

- A. Motor Neuron
- B. Sensory neuron
- C. Inter neuron
- D. Nerve

128. As a result of competition among friends, Ahmed eats a lot of pakoras, resulting in rise of salts in blood, to compensate, \_\_\_\_\_ mechanism will be triggered in the body.

- A. Positive feed back
- B. Negative feed back
- C. Internal feed back
- D. External feed back



129. Due to the presence of \_\_\_\_\_, the reabsorption of water is increased in the collecting ducts.

- A. Mg
- B. ADH
- C. Kidney stones
- D. High pH

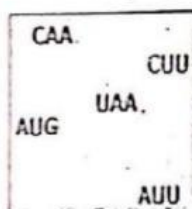
130. When a color blind male marries a normal female, what will be the chances of colorblindness in his grandsons, if his daughter marries to a normal male?

- A. 10%
- B. 25%
- C. 50%
- D. 100%

131. Humans are \_\_\_\_\_ and mostly use \_\_\_\_\_ means for thermoregulation.

- A. Ectotherm, behavioral
- B. Endotherm, physiological
- C. Ectotherm, physiological
- D. Endotherm, behavioral

132. Read the code mentioned in the following picture and arrange the sequence of all five codons in which Leucine is at 3rd position while isoleucine at 4th position. Keep in mind that CUU is the code for Leucine, AUU for Isoleucine and CAA for glutamine.



- A. UAA- AUG-CAA-CUU-AUU
- B. AUG-CAA-CUU-AUU-UAA
- C. AUU-AUG-CAA-CUU- UAA
- D. AUG- UAA -CUU-AUU-CAA

133. Because it is capable of dissolving more substances than any other liquid, \_\_\_\_\_ is called the "universal solvent".

- A. Ethane
- B. Alcohol
- C. Chloroform
- D. Water

134. Which animals support Darwin's view of inheritance of desirable variations?

- A. Giraffe
- B. Galapagos finches
- C. Snake
- D. All of the above

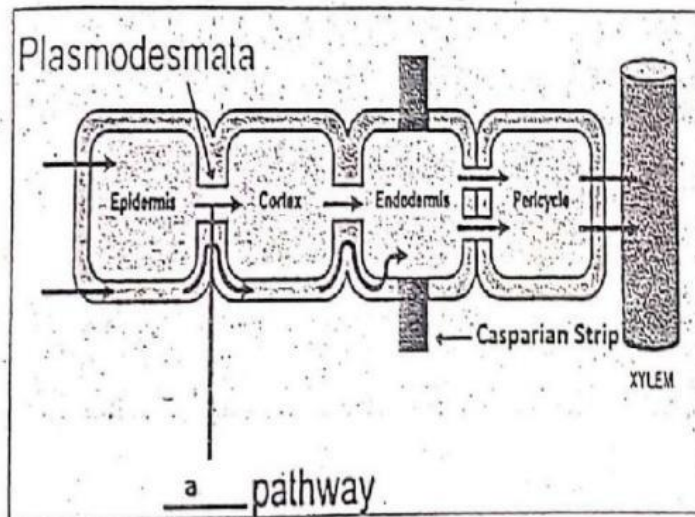
135. Interphase is a phase of the cell cycle defined only by the absence of \_\_\_\_\_.

- A. Enzymes
- B. DNA
- C. Replication
- D. Cell division

136. Juxta-medullary nephrons are present only in:

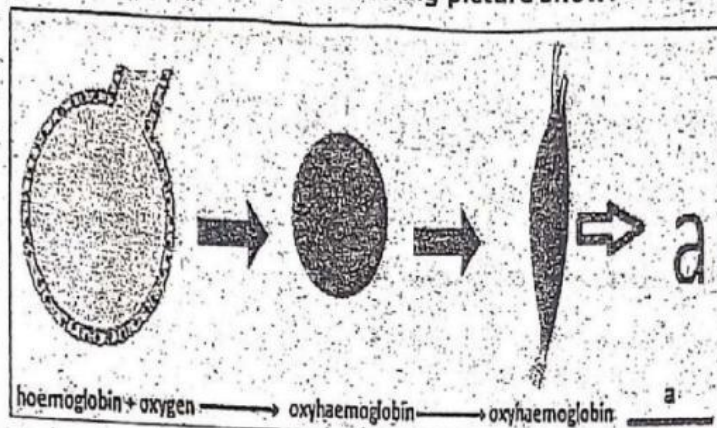
- A. Fishes and amphibians
- B. Amphibians and birds
- C. Birds and mammals
- D. Mammals and fishes

137. What does 'a' in the following picture show?



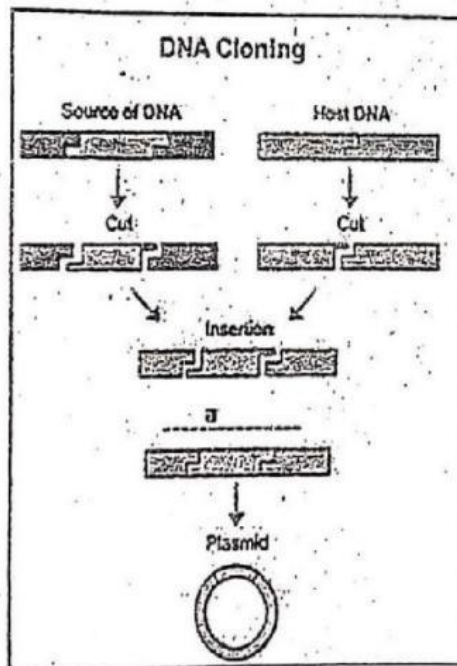
- A. Cellular pathway
- B. Symplast pathway
- C. Apoplast pathway
- D. Water pathway

138. What does 'a' in the following picture show?



- A. Dissociation of oxyhaemoglobin
- B. Reassociation of oxyhaemoglobin
- C. Recombination of oxyhaemoglobin
- D. Breakdown of haemoglobin

139. What is Molecule "a" in the following picture?



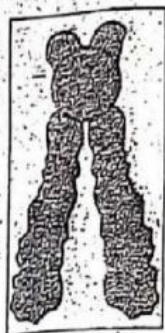
- A. Host cell
- B. Donor cell
- C. Restriction enzyme
- D. Recombinant DNA



140. A group of immune cells that mediates the cellular immune response by processing and presenting antigens for recognition by certain other cells of immune system is called \_\_\_\_\_.

- A. Natural killer cells
- B. Interferons
- C. Antigen-presenting cells
- D. Vaccines

141. Name the type of the following chromosome.



- A. Metacentric
- B. Sub metacentric
- C. Telocentric
- D. Acrocentric

142. The complete aerobic oxidation of glucose results in the synthesis of as many as \_\_\_\_\_ molecules of ATP.

- A. 16
- B. 26
- C. 36
- D. 46

143. Primary function of fats in aquatic mammals is \_\_\_\_\_ and in terrestrial mammals is \_\_\_\_\_.

- A. to reserve water, to reserve salts
- B. to reserve salts, to reserve water
- C. to reserve food, conserving heat
- D. conserving heat, to reserve food

144. Crossing over is an exchange of genes between \_\_\_\_\_ resulting in a mixture of parental characteristics in offspring.

- A. Sister Chromatids
- B. Non homologous Chromosomes
- C. Sex chromosomes
- D. Homologous chromosomes



145. All of the following are reflex actions EXCEPT:

- A. Change in the size of the pupil in response to light
- B. Swallowing of bolus
- C. Sudden jerky withdrawal of hand when pricked
- D. Knees jerk in response to a blow

146. What is  $q$  in Hardy Weinberg equilibrium?

- A. Frequency of the dominant allele
- B. Frequency of the recessive allele
- C. Frequency of both alleles
- D. Number of both alleles



Educational  
Testing Service

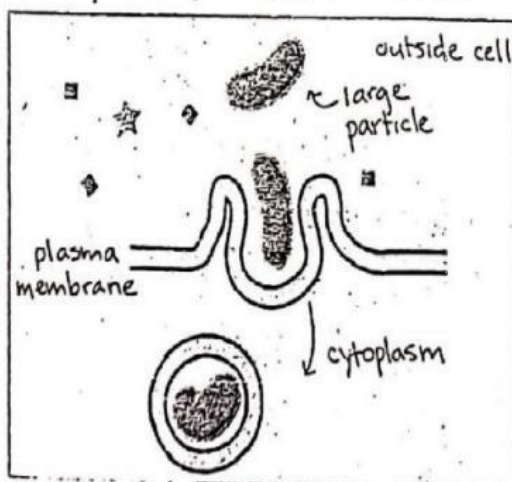
147. Genome of viruses is composed of \_\_\_\_\_

- A. DNA
- B. RNA
- C. Protein
- D. Both A and B

148. Carbon dioxide fixation can be enhanced by enhancing the efficiency of:

- A. Auxins
- B. Ribulose biphosphate
- C. Lactoferrin
- D. Agrobacterium

149. Label the following phenomenon.



- A. Exocytosis
- B. Osmosis
- C. Diffusion
- D. Phagocytosis

150. There is a small population of beetles on a grass in which some are green and some are brown in color. A group of students is passing from that place and walks on them. By chance, green color beetles are pressed under their feet resulting in:

- A. The balance of the genetic equilibrium of that population
- B. No affect to the genetic equilibrium of that population
- C. Change in the genetic equilibrium of that population
- D. Genetic equilibrium doesn't apply in that population

151. Which of the following is NOT true for a gene?

- A. A gene is a sequence of nucleotides in DNA
- B. A gene is the basic unit of heredity
- C. A gene codes for a molecule that has a function
- D. A gene expresses to form chromosomes

152. Function of respiratory passage, Cilia is to keep the airways clear of:

- A. Carbon dioxide
- B. Oxygen
- C. Dust
- D. Carbon mono oxide



Educational  
Testing Service

153. \_\_\_\_\_ is the storage form of carbohydrates in animals and humans which is equivalent to the \_\_\_\_\_ in plants.

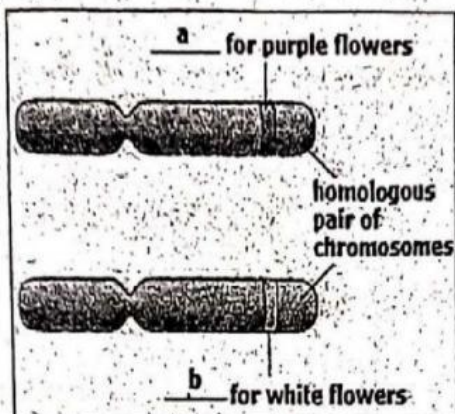
- A. Glycogen, cellulose
- B. Starch, cellulose
- C. Glycogen, starch
- D. Starch, glycogen

154. As an essential element in living organisms, \_\_\_\_\_ ion is playing important role in insulin secretion, release of neurotransmitters, muscles contraction and heartbeat regulation.

- A. Sodium
- B. Potassium
- C. Calcium
- D. Chloride



155. What are a and b in the following picture?



- A. Allele and allele
- B. Allele and gene
- C. Gene and gene
- D. Mutation and gene



156. Arrange the following according to the level of protein structures:

- |               |
|---------------|
| a lysozyme    |
| b haemoglobin |
| c insulin     |
| d hairs       |

- A. c, d, a, b
- B. a, b, c, d
- C. d, c, b, a
- D. a, d, c, b

157. In egg,  $Ca^{+2}$  plays important role especially at the time of fertilization. Therefore, \_\_\_\_\_ are present in many thousand numbers inside the cell membrane.

- A. Ribosomes
- B. Chloroplast
- C. Mitochondria
- D. Endoplasmic Reticulum

158. Genetic equilibrium is a:

- A. Change of allele and gene frequency in a population
- B. Stability of allele and gene quantity in a population
- C. Change of allele and gene number in a population
- D. Stability of allele and gene frequency in a population

159. Choose the term from the following which is NOT a part of gene therapy?

- A. Bone marrow transplant
- B. Retrovirus
- C. DNA Fingerprinting
- D. Somatic cells

160. Synapse formed at the sites where the terminal branches of the axon of a motor neuron contact a target muscle cell is called:

- A. Sensory end plate
- B. Synapse end plate
- C. Motor end plate
- D. Post synaptic membrane



Educational  
Testing Service

## PHYSICS

161. In Compton Scattering experiment the X-ray wavelength change  $\Delta\lambda$  is \_\_\_\_\_. Here  $h$  is Plank constant,  $m_0$  is rest mass of electron and  $\theta$  is angle after scattering.

A.  $\Delta\lambda = \frac{h}{m_0 c} (1 + \cos \theta)$

B.  $\Delta\lambda = \frac{h}{m_0 c} (1 - \cos^2 \theta)$

C.  $\Delta\lambda = \frac{h}{m_0 c} (1 - \cos \theta)$

D.  $\Delta\lambda = \frac{h}{m_0 c^2} (1 - \cos \theta)$



Educational  
Testing Service

162. An object is falling down with a speed of 20 m/s. After 3 seconds its velocity will be \_\_\_\_\_ m/s ( $g = 10 \text{ m/s}^2$ ).

- A. 05  
B. 50  
C. 55  
D. 95

163. In Young's double slit experiment, if  $d$  is separation between two slits  $\lambda$  is wavelength of light and  $\theta$  is angle of line from center of slits to the point of observation on the screen; then for maxima (bright fringe); the formula is \_\_\_\_\_.

- A.  $2d \sin \theta = m\lambda$ ;  $m = 0, 1, 2, \dots$   
B.  $d \sin \theta = m\lambda$ ;  $m = 0, 1, 2, \dots$   
C.  $d \sin \theta = (m + 1/2)\lambda$ ;  $m = 0, 1, 2, \dots$   
D.  $2m \sin \theta = d\lambda$ ;  $m = 0, 1, 2, \dots$

CHAPTER NO 9

164. The polarization of light by tourmaline crystals is due to \_\_\_\_\_ effect.

- A. selective diffraction  
B. selective reflection  
C. selective interference  
D. selective absorption

CHAPTER NO 9



165. A paratrooper is falling down with uniform velocity and also rotating with a constant angular velocity of  $0.2 \text{ rad/sec}$ . The body satisfies \_\_\_\_\_.

- A. First condition of equilibrium but not second
- B. Second condition of equilibrium but not first
- C. First and second condition of equilibrium
- D. Neither First nor the second condition of equilibrium

166. If  $U_{92}^{235}$  decays by emitting two  $\alpha$  one  $\beta$  and two  $\gamma$ -rays the new daughter element y is = \_\_\_\_\_.

- A.  $y_{88}^{227}$
- B.  $y_{89}^{227}$
- C.  $y_{90}^{227}$
- D.  $y_{89}^{231}$



Educational  
Testing Service

167. A changing current in a coil sets up a changing magnetic field around it which in turn induces an e.m.f. in it. This effect is known as \_\_\_\_\_.

- A. Simple induction
- B. Mutual induction
- C. Self-induction
- D. EMF induction

168. The principle of an AC generator is \_\_\_\_\_.

- A. Lenz's law
- B. Faraday's law
- C. Self-induction
- D. Ampere's law

169. A material that does NOT become radioactive after absorbing neutrons is called \_\_\_\_\_.

- A. Shielding
- B. Reactor fuel
- C. Control material
- D. Coolant



3:25 PM

 20

170. The Bragg's Law for measurement of wave length  $\lambda$  of x-rays, using crystal lattice planes having distance  $d$  between each other, for constructive interference for integral multiple of  $\lambda$  is \_\_\_\_\_.

- A.  $m\lambda = 2d / \sin \theta$
- B.  $2\lambda = md \sin \theta$
- C.  $m\lambda = 2d \sin \theta$
- D.  $d\lambda = 2m \sin \theta$



171. The velocity of particle is related to time according to equation  $v = ct^3$ . The dimensions of constant  $c$  are \_\_\_\_\_.

- A.  $L^{-1}T^{-1}$
- B.  $LT^{-3}$
- C.  $LT^{-4}$
- D.  $L^{-2}T^{-2}$

CHAPTER NO. 1

172. What should the distance of an object from a convex lens of focal length  $f=10$  cm in order to produce an erect image twice as large as the object?

- A. 20 cm from the lens
- B. 15 cm from the lens
- C. 10 cm from the lens
- D. 05 cm from the lens

173. The scalar or Dot product of Vectors  $(3i - 2j + 4k)$  and  $(2i + 2j - 3k)$  is \_\_\_\_\_.

- A. -9
- B. -10
- C. -11
- D. 10

CHAPTER NO 2

174. The sum of Kinetic Energy and the Potential Energy is always constant provided \_\_\_\_\_ motion.

- A. there is greater force of friction involved during
- B. body is in simple harmonic
- C. there is less force of friction involved during
- D. no force of friction involved during

S-20-3525-LUMHS- MBBS&BDS&PHARMAC-GREEN-15092019

38

175. Three times decrease in the distance between the plates of a parallel plate capacitor will \_\_\_\_\_.

- A. decrease the capacitance three times
- B. decrease the capacitance nine times
- C. increase the capacitance three times
- D. increase the capacitance six times

176. A car of mass 1200 Kg initially at rest has been accelerated to speed of 8 m/s in 16 meters. Average acceleration of car is \_\_\_\_\_ m/s<sup>2</sup> and Force is \_\_\_\_\_ N.

- A. 1.5 and 1500
- B. 2.5 and 2400
- C. 3.5 and 3500
- D. 2 and 2400



Educational  
Testing Service

177. In SI system of units, the fundamental units of length, mass, and time are \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_ respectively.

- A. Meter, Kilogram and Kilo-second
- B. Kilometer, Kilogram and Hour
- C. Meter, Kilogram and Second
- D. Centimeter, Centigram and Second

CHAPTER NO 1

178. In Nuclear Physics the mass defect is referred to \_\_\_\_\_.

- A. difference in masses of free neutron and proton
- B. difference in masses of free neutrons and bonded nucleus
- C. difference in masses of free nuclear constituent and bonded nucleus
- D. difference between atomic mass and atomic number

179. The formula for Paschen series for Hydrogen spectrum is \_\_\_\_\_.

- A.  $\frac{1}{\lambda} = R_H \left( \frac{1}{2^2} - \frac{1}{n^2} \right); n = 3, 4, 5, \dots$
- B.  $\frac{1}{\lambda} = R_H \left( \frac{1}{1^2} - \frac{1}{n^2} \right); n = 2, 3, 4, 5, \dots$
- C.  $\frac{1}{\lambda} = R_H \left( \frac{1}{4^2} - \frac{1}{n^2} \right); n = 5, 6, 7, \dots$
- D.  $\frac{1}{\lambda} = R_H \left( \frac{1}{3^2} - \frac{1}{n^2} \right); n = 4, 5, 6, \dots$



180. The necessary condition for the Boyle's law to hold is that the process must be \_\_\_\_\_.

- A. Isobaric
- B. Adiabatic
- C. Isochoric
- D. Isothermal



**Educational  
Testing Service**

181. In inelastic collision the kinetic energy before and after the collision \_\_\_\_\_ but the momentum of the system before and after the collision is \_\_\_\_\_.

- A. Conserved ... conserved
- B. Changes ... conserved
- C. Changes ... changes
- D. Conserved ... changes

182. Which statement describes the electric potential difference between two points in electric field of charge  $Q$ ?

- A. The difference of electric field between the points per unit charge.
- B. The ratio of the power dissipated between the points to the mass of charge.
- C. The work done in moving a test charge between points divided by magnitude of test charge.
- D. The force required to move a unit positive charge between the points per unit charge.

183. When an object is thrown upward, it rises to height  $h$ . How high is the object in terms of  $h$ , when it has lost  $1/3$  of its original kinetic energy?

- A.  $h/2$
- B.  $h/3$
- C.  $h/4$
- D.  $h/6$

184. The internal energy of the system decreases in an adiabatic process. Which of the following must be true regarding this process?

- A. Heat flows out of the system
- B. Work is done by the system
- C. Work is done on the system
- D. The potential energy of the system is changing

185. If  $\mu_o$  is permeability of the medium and  $\epsilon_o$  is permittivity of the

medium then value of  $\sqrt{\frac{1}{\mu_o \epsilon_o}}$  is equal to \_\_\_\_\_

- A. Planks constant
- B. Speed of sound waves
- C. Speed of ultrasound waves
- D. Speed of light

186. In a step up transformer \_\_\_\_\_

- A.  $V_s > V_p$  while  $I_s > I_p$
- B.  $V_s < V_p$  while  $I_s > I_p$
- C.  $V_s = V_p$  while  $I_s > I_p$
- D.  $V_s > V_p$  while  $I_s < I_p$



187. If compressible medium has bulk modulus denoted by B and density denoted by  $\rho$ , then the Newton formula for speed of sound in medium is \_\_\_\_\_.

- A.  $v = \sqrt{B / \rho}$
- B.  $v = \sqrt{B \rho}$
- C.  $v = B / \rho$
- D.  $v = \sqrt{\rho / B}$

188. In order to produce pair production the minimum energy of photon required is \_\_\_\_\_.

- A. 1.02 KeV
- B. 1.02 MeV
- C. 10.2 KeV
- D. 1.00 MeV

189. The Bohr's postulate for stationary orbits of Hydrogen atom is \_\_\_\_\_. Here  $m$  is mass of electron,  $v$  velocity,  $r$  orbital radius and  $h$  is Plank's constant.

A.  $mr = \frac{nhv}{2\pi}$

B.  $mvr = \frac{nh}{2\pi}$

C.  $mvr = \frac{nh}{2\pi r}$

D.  $mv = \frac{nh}{2\pi}$



190. A car starts from rest and moves with constant acceleration. During 4th second of its motion it covers a distance of 21 meters. The acceleration of the car is \_\_\_\_\_  $\text{ms}^{-2}$ .

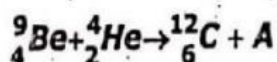
A. 04

B. 06

C. 08

D. 16

191. Which particle (marked A) is obtained in following nuclear reaction?



A.  $A \equiv {}^1_1\text{H}$

B.  $A \equiv {}^1_0\text{n}$

C.  $A \equiv {}^2_1\text{H}$

D.  $A \equiv {}^2_2\text{He}$



192. An electron is moving with velocity  $v$  has momentum  $3 \times 10^{-26} \text{ Kg.m / s}$ . The de Broglie wavelength associated with it is \_\_\_\_\_.

Value of  $h = 6.63 \times 10^{-34} \text{ Js}$ .



Educational  
Testing Service

- A. 24.1nm
- B.  $22.1 \mu\text{m}$
- C. 22.1nm
- D. 22.1mm

193. The Laplace's correction to Newton's formula is based on the fact that the compressions and rarefactions occur as \_\_\_\_\_.

- A. Adiabatic process
- B. Isothermal process
- C. Isochoric process
- D. Isobaric process

194. A car 500 Kg is travelling at a constant speed of 9 m/s rounds a curve of 100 m. What is the centripetal force?

- A. 205 N
- B. 305 N
- C. 405 N
- D. 505 N

195. When a train while whistling passes near you, a considerable change in the pitch of sound is heard. When the train is moving away, the pitch of the sound \_\_\_\_\_ whereas the pitch of the sound \_\_\_\_\_ when the train is approaching.

- A. increases ... decreases
- B. increases ... remains same
- C. decreases ... increases
- D. decreases ... remains same

196. The vector product of two vectors A and B is \_\_\_\_\_ vectors A and B.

- A. equal to product of magnitudes of
- B. in the plane parallel to
- C. perpendicular to plane containing
- D. less in magnitude than product of magnitudes of



197. If a conductor carrying current  $I$  is placed in uniform magnetic field  $B$ , it experiences a magnetic force  $F$ . The direction of this force  $F$  \_\_\_\_\_.

- A. Is parallel to current  $I$  only
- B. Is perpendicular to current  $I$  only
- C. Is perpendicular to magnetic field  $B$  only
- D. Is perpendicular to both current  $I$  and magnetic field  $B$

198. A battery of 12 volts is connected to three resistors of 4 Ohm, 5 Ohm and 3 Ohm joined together in parallel. The current through the 3 Ohm resistance is \_\_\_\_\_.

- A. 1.0 A
- B. 2.5 A
- C. 3.0 A
- D. 4.0 A



**Educational  
Testing Service**

199. If time interval between occurrence of two events is measured in a frame with no relative motion in which two events occur. Then the time  $t$  measured by observer in a frame moving with relative velocity  $v$  is \_\_\_\_\_.

A. 
$$t = \frac{t_o}{\sqrt{1 - \frac{v}{c}}}$$

B. 
$$t = \frac{t_o}{\sqrt{1 - \frac{v^2}{c^2}}}$$

C. 
$$t = \frac{t_o}{\sqrt{1 + \frac{v^2}{c^2}}}$$

D. 
$$t = \frac{t_o}{\sqrt{\frac{v^2}{c^2} - 1}}$$

200. A traveling wave, in which the particles of the distributed medium move parallel to the direction of propagation of the wave is called:

- A. Transverse Wave
- B. Circular Waves
- C. Longitudinal Wave
- D. Stationary Waves



Educational  
Testing Service

# National Testing Service Past Papers



Question No	Correct Choice	Question No	Correct Choice
Q 1	D	Q 101	B
Q 2	A	Q 102	D
Q 3	B	Q 103	C
Q 4	D	Q 104	B
Q 5	B	Q 105	C
Q 6	D	Q 106	B
Q 7	B	Q 107	B
Q 8	D	Q 108	C
Q 9	C	Q 109	C
Q 10	B	Q 110	D
Q 11	D	Q 111	C
Q 12	A	Q 112	D
Q 13	D	Q 113	C
Q 14	A	Q 114	D
Q 15	C	Q 115	A
Q 16	D	Q 116	D
Q 17	D	Q 117	B
Q 18	C	Q 118	C
Q 19	A	Q 119	D
Q 20	C	Q 120	C
Q 21	D	Q 121	A
Q 22	B	Q 122	B
Q 23	B	Q 123	C
Q 24	C	Q 124	A
Q 25	C	Q 125	D
Q 26	C	Q 126	C
Q 27	B	Q 127	B
Q 28	C	Q 128	B
Q 29	B	Q 129	B
Q 30	B	Q 130	C
Q 31	D	Q 131	B
Q 32	C	Q 132	B

# National Testing Service Past Papers



Q 33	C	Q 133	D
Q 34	A	Q 134	D
Q 35	C	Q 135	D
Q 36	B	Q 136	C
Q 37	C	Q 137	B
Q 38	D	Q 138	A
Q 39	D	Q 139	D
Q 40	C	Q 140	C
Q 41	C	Q 141	D
Q 42	C	Q 142	C
Q 43	C	Q 143	D
Q 44	A	Q 144	D
Q 45	B	Q 145	B
Q 46	B	Q 146	B
Q 47	C	Q 147	D
Q 48	B	Q 148	B
Q 49	A	Q 149	D
Q 50	B	Q 150	C
Q 51	B	Q 151	D
Q 52	C	Q 152	C
Q 53	B	Q 153	C
Q 54	B	Q 154	C
Q 55	D	Q 155	A
Q 56	C	Q 156	A
Q 57	A	Q 157	D
Q 58	A	Q 158	D
Q 59	B	Q 159	C
Q 60	C	Q 160	C
Q 61	A	Q 161	C
Q 62	C	Q 162	B
Q 63	B	Q 163	B
Q 64	C	Q 164	D
Q 65	D	Q 165	C
Q 66	C	Q 166	B



# National Testing Service Past Papers



Q 67	C	Q 167	C
Q 68	A	Q 168	B
Q 69	D	Q 169	C
Q 70	D	Q 170	C
Q 71	C	Q 171	C
Q 72	A	Q 172	D
Q 73	B	Q 173	B
Q 74	D	Q 174	B
Q 75	D	Q 175	C
Q 76	A	Q 176	D
Q 77		Q 177	C
Q 78	C	Q 178	C
Q 79	C	Q 179	D
Q 80	D	Q 180	D
Q 81	B	Q 181	B
Q 82	C	Q 182	C
Q 83	A	Q 183	B
Q 84	D	Q 184	B
Q 85	C	Q 185	D
Q 86	C	Q 186	D
Q 87	B	Q 187	A
Q 88	C	Q 188	B
Q 89	D	Q 189	B
Q 90	D	Q 190	B
Q 91	B	Q 191	B
Q 92	D	Q 192	C
Q 93	D	Q 193	A
Q 94	D	Q 194	C
Q 95	D	Q 195	C
Q 96	A	Q 196	C
Q 97	B	Q 197	D
Q 98	B	Q 198	D
Q 99	C	Q 199	B
Q 100	B	Q 200	C